

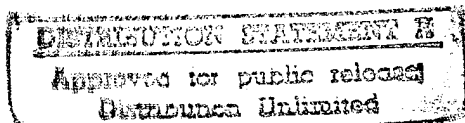
NAVAL WAR COLLEGE
Newport, R.I.

**GREEN WAR: AN ASSESSMENT OF THE ENVIRONMENTAL
LAW OF INTERNATIONAL ARMED CONFLICT**

by

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As an Advanced Research Project



A paper submitted to the Director of the Advance Research Department in the Center for Naval Warfare Studies in partial satisfaction of the requirements for the Master of Arts Degree in National Security and Strategic Studies.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Air Force.

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Victory smiles upon those who anticipate the changes in the character of war, not upon those who wait to adapt themselves after the changes occur.

Air Marshall Giulio Douhet

EXECUTIVE SUMMARY

This article examines the legal regime governing the environment during armed conflict. Operating from a perspective which holds that law is both contextual and directional, the study begins by tracing the development of the environmental law of armed conflict. Particular attention is paid to two watershed events, the Vietnam Conflict and the Gulf War. Several trends are identified as permeating the historic experience, the most significant being a gradual shift from an anthropocentric cognitive prism towards one that increasingly views the environment as exhibiting intrinsic value. The section concludes by noting that the prevailing assessment is one of adequacy.

This assessment is tested in the second section of the piece. The applicability of peacetime norms in war is considered first. Finding the matter unsettled, the article suggests criteria which can be used in specific cases to determine when peacetime law applies. It also surveys the development of relevant peacetime norms. The *jus in bello* is then examined; analysis includes customary law, non-environmentally specific treaty provisions, and the limited conventional law directly on point. Aspects that might hinder consistent interpretation, application and enforcement are highlighted.

The article concludes with an overall assessment of the state of the law and tentative suggestions on how shortcomings might be addressed. Arguments for sufficiency are rejected; instead, the law is characterized as difficult to understand and apply. Further, though the trend towards protection of the environment *per se* is applauded, concern is expressed over intrinsic valuation, and the implications it has for safeguarding human values. While the idea of a new convention to remedy the short falls is supported, it is emphasized that the time is not currently ripe for such an effort. Finally, recommendations as to the nature of the new multi-service law of war manual are offered.

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I. FRAMING THE ISSUES

As the 21st century approaches, the methods, means and effects of warfare are in the midst of a profound "revolution in military affairs."¹ This revolution is evident, for instance, in the new focus of the U.S. armed forces on military operations other than war (MOOTW),² in revised tactics designed to exploit stealth technology and in a probably healthy obsession with the possibilities of information warfare.³ One of its most visible aspects is a growing interrelationship between war and the environment. It is an interrelationship reflected both in armed conflict's impact on nature and in use of the environment as a tool of warfare. While these are not novel phenomena in war, the potential scope of damage and the next generation environmental weapons that science is making possible *are* unprecedented. There is little question that this quantitative and qualitative evolution merits characterization as "revolutionary."

In this article, that law which *might* govern activities bearing on the environment during hostilities will be identified and assessed.⁴ Lack of consensus on the contents of the relevant law highlights the criticality of this task. Prior to considering the prescriptive environment proper, it is

¹ For an interesting discussion of what constitutes a "revolution in military affairs," see Andrew Krepenivich, *Cavalry to Computer: The Pattern of Military Revolutions*, in *Strategy and Force Planning* 582 (Naval War College Faculty eds., 1995). Throughout this article, the terms "armed conflict" and "war" will be used interchangeably. Some scholars draw a distinction between the them, reserving the term "war" for those situations in which a formal declaration has been made. This distinction serves little purpose given the scope and scale of post-World War II conflicts and the lack of a declaration of war in the vast majority of them.

²For a basic description of MOOTW, see Joint Chiefs of Staff, *Doctrine for Joint Operations* (Joint Publication 3-0), ch. V (1995).

³ Information warfare has generated a flurry of activity in the Department of Defense. For an introduction to the subject, see Martin C. Libicki, *What is Information Warfare?* (1995). See also Joint Chiefs of Staff, *Information Warfare: Legal, Regulatory, Policy and Organizational Considerations for Assurance* (Research Report for the Chief, Information Warfare Division-J6K) (July 4, 1995).

⁴I first addressed this topic in tentative form in the comment, *The Environmental Law of War: An Invitation to Critical Reexamination*, 7 USAFA J. Leg. Stu. ____ (1996). Though parts of this article draw directly on the previous piece, it builds on my initial thoughts and expands the focus of consideration beyond core *jus in bello* substantive prescriptions.

first necessary to examine how we got to where we are today. A historical survey is an essential first step in any comprehensive legal analysis, for law is both contextual and directional. It is contextual in the sense of being understood and applied based upon the social, political and economic environment it operates in.⁵ This is certainly the case with the environmental law of war, which is primarily the product of two historic events -- Vietnam and the Gulf War. At the same time, law tends to be directional; it evolves over time in distinct directions.⁶ Seldom the result of spontaneous or random generation, these trends are often identifiable and occasionally predictable. The environmental law of war evidences several, one of which, a growing tendency to value the environment for more than merely what it offers man, has enormous potential for complicating and transforming the law.

Once context and direction are established, discussion turns to the contemporary law. For analytical clarity, it is grouped into three categories: peacetime prescriptions, customary law and treaties. The section begins by exploring whether peacetime environmental prescriptions remain intact during armed conflict, and, if so, as between who and in what circumstances. Since peacetime environmental law continues to evolve, cataloging substantive norms contributes less to resolving these queries than does ascertaining the criteria for their applicability during hostilities. Analysis of the law of war follows. Customary law, which lies at its core, is examined to determine when traditional norms can be interpreted as providing environmental safeguards. An

⁵For example, this contextuality is apparent in the growing willingness of the international community to subordinate sovereignty to humanitarian interests in the post-Cold War, post-bipolar environment. Query the extent to which humanitarian operations in Somalia, Iraq or Bosnia would have been possible had the Cold War continued. On contextuality and the use of force, see Michael N. Schmitt, *The Resort to Force in International Law: Reflections on Positivist and Contextual Approaches*, 37 A.F.L. Rev. 105 (1994).

⁶An excellent example of this temporal feature of law is found in the erosion of neutral (vice belligerent) interests in the law of naval warfare. The erosion has resulted from both technological advances in the means of warfare and the increasing interdependency of the international economy.

evaluation of treaty law, not only the sparse collection of environment specific provisions, but also its broader non-specific components, completes the review of prescriptive norms.

As will be seen, most commentators judge the *law* to be adequate, but fault lax enforcement and weak dissemination for the impunity with which rogue leaders have abused the environment in this decade. This article tests their characterization, both from the perspective of adequate environmental protection and that of usable normative guidance for policy makers and warfighters. Additionally, it offers several thoughts on where the international community, and particularly the U.S. armed forces, should be headed. To help translate theory into reality, the conclusion includes an outline of environmental factors that those involved in the effort to draft the new U.S. law of war manual need to consider.

Preliminarily, it is useful to delineate the parameters of inquiry. First, arms limitation, arms proliferation and test ban treaty regimes are not analyzed.⁷ The issue at hand is one of use, not possession. An assessment of environmental prescriptions operative during *non*-international armed conflict is, likewise, absent.⁸ The goal is only to consider hostilities that are truly

⁷ Many such treaties bear on the relationship between war and the environment if only by virtue of the fact that environmentally destructive weapons are limited or prohibited. Consider, e.g., the 1967 Moon Treaty, which bans the placing in orbit of nuclear weapons or weapons of mass destruction, the Antarctic Treaty, which prohibits testing of any type of weapons in the Antarctic, or the 1963 Partial Test Ban Treaty, which forbids nuclear weapons tests in the atmosphere, space and under water. Treaty on the Principles Governing the Activities of States in the Exploitation and Use of Outer Space, Including the Moon and Other Celestial Bodies, Jan. 27, 1967, art. IV, 18 U.S.T. 2410, 610 U.N. T.S. 205, *reprinted in* 6 I.L.M. 386 (1967); The Antarctic Treaty, June 23, 1961, art. I(1), 12 U.S.T. 794, 402 U.N. T.S. 71; Treaty Banning Nuclear Weapons Tests in the Atmosphere, in Outer Space and Under Water, Aug. 5, 1963, art. 1, 14 U.S.T. 1313, 480 U.N. T.S. 43, *reprinted in* 2 I.L.M. 889 (1963).

⁸ The distinction between international and non-international armed conflict is not always clear. Protocol II Additional to the Geneva Conventions, an agreement designed to govern the latter, describes non-international armed conflict as "armed conflicts...which take place in the territory of a (party to the Convention) between its armed forces and dissident armed forces or other organized armed groups which, under responsible command, exercise such control over a part of its territory as to enable them to carry out sustained and concerted military operations...." Protocol Additional to the Geneva Conventions of August 12, 1949, and Relating to the Protection of Victims of Non-international Armed Conflicts, June 8, 1977, art. 1(1), U.N. Doc. A/32/144, Annex II (1977), 16 I.L.M. 1442 (1977), *reprinted in* 16 I.L.M. 1442 (1977) [hereinafter Protocol II]. International armed conflict is that which arises between states (or other subjects of international law). *See, e.g.*, Common Article 2 to the Geneva Conventions: "...the present Convention shall apply to all cases of declared war or of any other armed

international in scope. Further, the article does not address the *jus ad bellum* issue of when an “attack” on, or use of, the environment constitutes a resort to force in violation of the United Nations Charter.⁹ Instead, analysis of the *jus in bello* (i.e., *how* force may be employed, not *when*) dominates the study. Finally, no attempt is made to comprehensively evaluate the legality of individual environmentally harmful episodes of warfare; analysis and commentary focus on the law itself.¹⁰

Clarifying the definitional context, particularly the term “environment,” is equally important. As used here, “environment” indicates those conditions, circumstances, substances and organisms which affect the global ecosystem. Physical phenomena such as weather or the permeability of the ozone layer are examples of “conditions,” whereas the course of a river or the existence of a lake illustrate the term “circumstances.” Food, timber, soil, water and oil exemplify

conflict which may arise between two or more of the High Contracting Parties, even if a state of war is not recognized by one of them.” Geneva Convention for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field, Aug. 12, 1949, art. 2, 6 U.S.T. 3114, 75 U.N. T.S. 31; Geneva Convention for the Amelioration of the Condition of the Wounded, Sick and Shipwrecked Members of the Armed Forces at Sea, Aug. 12, 1949, art. 2, 6 U.S.T. 3217, 75 U.N. T.S. 85; Geneva Convention Relative to the Treatment of Prisoners of War, Aug. 12, 1949, art. 2, 6 U.S.T. 3316, 75 U.N. T.S. 135; and Geneva Convention Relative to the Protection of Civilian Persons in Time of War, Aug. 12, 1949, 6 U.S.T. 3516, 75 U.N. T.S. 287 [hereinafter Geneva Convention IV]. Additional Protocol I, which supplements the Geneva Conventions with regard to international armed conflict, simply refers back to Common Article 2. Protocol Additional to the Geneva Conventions of August 12, 1949 and Relating to the Protection of Victims of International Armed Conflict, June 8, 1977, art. 1(3), U.N. Doc. A/32/144, Annex I (1977), reprinted in 16 I.L.M. 1391 (1977) [hereinafter Protocol I]. In a somewhat controversial provision, Protocol I includes as *international* armed conflicts “armed conflicts in which peoples are fighting against colonial domination and alien occupation and racist regimes in the exercise of their right of self-determination.” *Id.* art. 1(4). Note that “internal disturbances and tensions, such as riots, isolated and sporadic acts of violence and other acts of a similar nature” are not armed conflict, either international or non-international. Protocol II, *supra*, art. 1(2).

⁹ Article 2(4) of the United Nations Charter provides that “(a)ll Members shall refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any state, or in any other manner inconsistent with the Purposes of the United Nations.” U.N. Charter art. 2, para. 4. The Charter does authorize the use of force when pursuant to a Security Council determination that it is “necessary to maintain or restore international peace and security” or required in individual or collective self-defense. *Id.* arts. 42 & 51.

¹⁰For instance, the question is not whether the Iraqis violated the law of armed conflict, but rather what law governs activities such as those they engaged in.

what is meant by "substances," and "organisms" include both plant and animal life. The concept of the "environment" also extends to usability. For example, mines or bomblets spread through an area can render it unusable; denial of use in this fashion is treated as the functional equivalent of damage.¹¹

While the need to define the environment before evaluating prescriptions governing harm to it is self-evident, the importance of identifying the *motivations* underlying environmental protection has proven not to be. The issue has been addressed only sparingly in the literature, within governmental fora or at conferences. Interestingly, those who do consider it tend to arrive at very different conclusions regarding the law's adequacy than most of their colleagues.¹² That being so, it is useful to draw the distinction early on to sensitize the reader to its effect.

There are basically two approaches.¹³ The prevailing one values the environment for what it offers man -- food, shelter, fuel, clothing and so forth. This *anthropocentric* approach focuses on the environment's ability to make life possible...and to take it away. Beyond survival benefits, the environment merits protection because of its impact on the quality of human life. For

¹¹ Yves Sandoz of the International Committee of the Red Cross has described the environment as follows: "The concept of the environment should be understood in the widest sense to cover the biological environment in which a population is living. It does not consist merely of the object indispensable to survival...--foodstuffs, agricultural areas, drinking water, livestock--but also includes forests and other vegetation..., as well as fauna, flora and other biological or climatic elements." Yves Sandoz, *Protection of the Environment in Time of War*, UNIDR Newsletter, July 1992, at 12.

¹² The most notable example is Wil Verwey, Chairman of the National University of Gronigen's (Netherlands) Department of International and Constitutional Law. See, e.g., Wil Verwey, *Observations on the Legal Protection of the Environment in Times of Armed Conflict*, 1994 Hague Y.B. Int'l L. 35; *Protection of the Environment in Times of Armed Conflict: In Search of a New Legal Perspective*, 8 Leiden J. Int'l L. 7 (1995); and *Protection of the Environment in Times of Armed Conflict: Do We Need Additional Rules?*, paper presented at "The Symposium on the Protection of the Environment During Armed Conflict and Operations Other Than War," Naval War College, September 1995 [hereinafter NWC Symposium Paper]. The last article, and all others presented at the NWC Conference are forthcoming in *Protection of the Environment During Armed Conflict & Other Military Operations* (Naval War College International Law Studies, vol. 69) (Richard Grunawalt et al. eds., 199_).

¹³ For an interesting discussion of "utilitarian" and "intrinsic worth" approaches, see Merrit P. Drucker, *The Military Commander's Responsibility for the Environment*, 11 Env'tl. Ethics 135 (1989).

instance, natural preserves or endangered species must be safeguarded lest man be deprived of their aesthetic value. Reduced to basics, anthropocentrism displays a strong utilitarian flavor.

On the other hand, the environment can be viewed as possessing *intrinsic* value, i.e., value that is autonomous. This value is not in lieu of anthropocentric value, but in addition to it. For intrinsic valuation advocates, determining the contribution made by the environment to human existence is only half the story when assessing whether its destruction is justifiable (and lawful). Calculating the intrinsic value of the environment's damaged component is equally necessary. Of course, intrinsic value measurements are inherently difficult since the point of departure is not the human self; however, proponents might argue that, through consideration of such factors as ecosystem function or species regeneration capacity, intrinsic value is sufficiently discernible to merit inclusion in legal formulae.

The play of the anthropocentric/intrinsic value distinction is, borrowing from the law of evidence, both an issue of weight and admissibility. Laws of war are at heart often about balancing competing interests. Whether one operates from within an anthropocentric or intrinsic value cognitive prism determines the relative *weight* accorded them. At the same time, it is fair to ask the even more basic question of whether intrinsic valuation has a place in the law of war at all, whether it is *admissible* if you will. Thus, this study searches for evidence of the distinction and, if one exists, the effects thereof. It concludes with thoughts on the appropriateness of any trends identified.

With the boundaries of inquiry set, and sensitized to the role of cognitive perspectives, analysis may proceed. As it does, reflect on the following pervasive issues. Does the law adequately protect the environment during international armed conflict? If so, are important

human interests sufficiently preserved and fostered? Does the law as crafted facilitate the balancing of environmental with other interests during warfare? Is it an adequate deterrent to unacceptable environmental damage during warfare, and, if not, why not? To what extent are the prescriptions sufficiently precise to serve as a guide in the decision processes of policy makers and warfighters? Finally, if the law falls short, how should the shortfalls be remedied? Bearing these questions in mind, we now turn to the historical context informing the environmental law of war.

II. HOW DID WE GET HERE?

A. The Environment and Warfare Before Vietnam

That war damages the environment is an indisputable truism. So too is the fact that when harnessed, the forces of nature can serve as a powerful weapon to turn on one's enemy.¹⁴ In the 17th century, for example, the Dutch destroyed dikes to flood their lowlands and stem the advance of their enemies, thereby devastating vast tracts of farmland. Some 300 years later, during the second Sino-Japanese War in 1938, the Chinese adopted an identical tactic when they destroyed the Huayuankow dike on the Yellow River to halt the Japanese invaders. Albeit successful militarily in the short term, the operation caused thousands of civilian deaths and flooded millions of acres of cultivated land. In the next decade, the Germans employed a similar technique by flooding vast areas of the Netherlands to slow the Allied push eastward. The European theater also witnessed repeated attacks on hydro-electric dams. To cite but one example, raids on the Möhne and Eder dams in May 1943, although appropriately depriving the Ruhr industrial complex of water and power, resulted in the death of over 1,300 civilians and shut

¹⁴An extensive discussion of the history of the environmental effects of warfare can be found in Arthur H. Westing, *Warfare in a Fragile World: The Military Impact on the Human Environment* (1980). In particular, refer to table 1.2.

off drinking water and energy to the four million Germans in the region. Dam attacks continued during the Korean and Vietnam conflicts.¹⁵

It was in this century that the first major environmental damage caused by the destruction of oil facilities occurred. In a notable chapter of the First World War, British Colonel Norton Griffiths destroyed the Romanian oil fields, richest in Europe, to preclude their falling into enemy hands when the Central Powers invaded.¹⁶ Romanian oil was again a target in the Second World War. Most noteworthy were the 1943 raids on the oil producing center at Ploesti. Memorable for the feat of airmanship involved in the fifteen-hundred mile flight, much of it through enemy fighter cover, the raids significantly damaged refineries and oil tanks fueling the Reich's war machine. As might be imagined, all such attacks resulted in extensive environmental damage.

Of course, it was in the Second World War that the only incidents in history of environmental destruction by means of nuclear weapons took place when U.S. aircraft bombed Hiroshima and Nagasaki in August 1945. Tens of thousands died immediately, with thousands of others doomed to suffer the effects of radiation for decades to come. The target area was turned

¹⁵The foregoing events are described in many sources. Of particular note is their inclusion in the ICRC Commentary to Protocol I. International Committee of the Red Cross, Commentary on the Additional Protocols of 8 June 1977 to the Geneva Conventions of 12 August 1949 (Yves Sandoz et al. eds. 1987), at 667. The raid on the Möhne dam was poignantly described by Wing Commander Guy Penrose Gibson of the RAF:

As Gibson flew his Lancaster up and down the dam, he saw the water of the dammed lake rising "like stirred porridge in the moonlight, rushing through a great breach." A few minutes later, he reported: "The valley was beginning to fill with fog and...we saw cars speeding along the roads in front of this great wave of water which was chasing them....I saw their headlights burning and I saw water overtake them, wave by wave, and then the color of the headlights underneath the water changing from light blue to green, from green to dark purple until there was no longer anything except the water bouncing up and down.

The American Heritage History of World War II (David G. McCullough ed., 1966), at 418.

¹⁶C.R.M.F. Cruttwell, A History of the Great War 1914-1918, 297-8 (1934), cited in Adam Roberts, *Environmental Issues in International Armed Conflict: The Experience of the 1991 Gulf War*, NWC Symposium Paper, *supra* note 12, at 5.

into a virtual wasteland.¹⁷ That the yield of the weapons is dwarfed by modern nuclear capabilities accents the potential environmental apocalypse which their widespread use would ensure today.

Despite the destructiveness of such events, the international community paid scant attention to their environmental consequences. The little which did surface was purely anthropocentric, a fact evidenced by the failure to mention the environment even once in the four Geneva Conventions promulgated in the immediate aftermath of World War II. In part, this may have been because, as Geoffrey Best has perceptively noted, until the Second World War man's destructive capabilities primarily threatened the anthropogenic environment.¹⁸ It was also surely the product of a failure to understand the complex interrelationships between human activities and the environment, the fragility of the environment or even its finite nature. Until the war in Vietnam, whatever protection the environment enjoyed under international law was purely coincidental.

¹⁷The destruction was described by a Japanese journalist who witnessed the explosion in Hiroshima.

Within a few seconds the thousands of people in the streets and the gardens in the center of the town were scorched by a wave of searing heat. Many were killed instantly, others lay writhing on the ground, screaming in agony from the intolerable pain of their burns. Everything standing upright in the way of the blast, walls, houses, factories, and other buildings, was annihilated....Horses, dogs and cattle suffered the same fate as human beings. Every living thing was petrified in an attitude of indescribable suffering. Even the vegetation did not escape. Trees went up in flames, the rice plants lost their greenness, the grass burned on the ground....

McCullough, *supra* note 15, at 616.

¹⁸Geoffrey Best, *The Historical Evolution of Cultural Norms Relating to War and the Environment*, in *Cultural Norms, War and Environment* 18, 18-20 (Arthur H. Westing ed., 1988).

B. Vietnam and Its Aftermath

During the Vietnam conflict, the environment began to play a prominent role in considerations of warfare's means and methods.¹⁹ For military planners, Vietnam presented unique challenges. U.S. and South Vietnamese forces faced both regular North Vietnamese Army troops who had infiltrated into the South and indigenous guerrilla units -- the Viet Cong -- supplied via a complex network of trails from the North and from Cambodian and Laotian sanctuaries. Among the factors that contributed to their ultimate success was an ability to melt into the vegetation and forests surrounding base camps whenever threatened. Operating from these areas, Communist forces effectively employed small unit tactics to attrite the U.S. and South Vietnamese. While this did little to "win the war" militarily, it drove the political cost up measurably, especially in the United States.

Understandably, the U.S. worked hard to defeat these tactics.²⁰ One approach was destruction of forests and dense vegetation to deny the enemy cover, mobility, logistic support and, in some cases, sustenance. U.S. forces utilized two techniques, beyond merely bombing the targeted zones with conventional munitions (an especially ineffective and inefficient method), to accomplish this end. First, they dropped herbicides over enormous areas of South Vietnam, both in wooded areas (86 %) and on crop lands (14%).²¹ By one estimate, approximately one tenth of

¹⁹ Probably the best account of the war's environmental impact is Arthur H. Westing, *Ecological Consequences of the Second Indochina War* (1976).

²⁰ Perhaps the best known of the attempted remedies was the failed Strategic Hamlet Program, an effort to deny the enemy sanctuary in villages throughout the South by securing the allegiance of the local villagers. Ultimately, this effort failed, in no small part due to the corruption and lack of commitment of our South Vietnamese allies. An interesting description of the counter insurgency effort in South Vietnam from the perspective of senior South Vietnamese officers can be found in General Cao Van Vien & Lieutenant General Dong Van Khuyen, *Reflections on the Vietnam War 1-84* (U.S. Army Center of Military History Indochina Monographs, 1980).

²¹ Westing, *supra* note 19, at 27. Three types of herbicides were used. Agents Orange and White operated to interfere with plant metabolism. Agent Blue, by contrast, dehydrated plants. The agents were generally dispersed

South Vietnam was sprayed during the war.²² At the same time, U.S. troops used heavy tractors with large blades attached -- the Rome Plow -- to cut through vegetation and trees. Initially, the effort concentrated on clearing land alongside roads to minimize the risk of ambushes. However, in 1967 large tracts began to be leveled; by war's end, Rome plows had cleared nearly three quarters of a million acres. Though labor intensive when compared to spraying, plowing was actually more effective in rendering a designated area unusable. As might be expected, both caused extensive damage to the flora (the military objective) and fauna of the region. In particular, the operations led to massive soil erosion in Vietnam's hilly terrain. The effect on animal habitats was especially severe, for the vegetation that regenerated proved less capable of supporting animal life than had previously been the case.²³

Between 1963 and 1972 the Air Force also seeded clouds in operations designed to lengthen the rainy season.²⁴ Since it was unpaved, U.S. forces hoped that extended rainfall would soften the surface and cause roadways to collapse, thereby slowing movement along the Ho Chi

from the air by C-123 aircraft. However, helicopters and even truck and boat mounted sprayers were also used. *Id.* at 24-27.

²² Approximately 2 % of Indochina was sprayed, though most such operations were limited to South Vietnam. In the South, the bulk of the defoliation efforts were centered in Military Region III, which surrounded Saigon. Some 30% of this area was sprayed at least once. *Id.* at 28.

²³ Commander Richard Carruthers (RAN), *International Controls on the Impact on the Environment of Wartime Operations*, *Envtl. and Plan. L. J.*, February 1993, at 38, 40. Arthur Westing points out that the spraying affected not only the autotrophic aspect of the ecosystem, but also the heterotrophic links, i.e., those beyond the first link in the food chain. In great part, this occurred because much animal activity takes place in the upper stories of vegetation, which were most severely affected by the spraying. Westing, *supra* note 19, at 32. The destruction resulting from the spraying is described *id.* at 28-40 and from the plowing *id.* at 47-49; a general discussion of the damage overall is found *id.* at 63-82.

²⁴ On March 20, 1974 the Department of Defense conducted a Top Secret briefing before the Subcommittee on Oceans and International Environment of the Committee on Foreign Relations describing the program. This briefing, since declassified, is reprinted in *Environmental Modification Treaty: Hearings on the Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques Before the Senate Committee on Foreign Relations*, 95th Cong., 2d Sess. 101 (1978) [hereinafter TS Brief].

Minh trail.²⁵ Reportedly, a secondary goal was to degrade enemy surface to air missile radar capabilities.²⁶ Disagreement exists over the success of these operations.²⁷ Nevertheless, there is little doubt that increasing rainfall can cause negative environmental consequences, ranging from increased soil erosion to destruction of vegetation and disease among animals.

For the first time, the environmental impact of military operations drew domestic and international attention. Multiple factors contributed to this new phenomenon. Obviously, the general increase in environmental awareness which coincided with the Vietnam War focused public attention. So too did anti-war sentiment. In a sense, the environmental damage provided a rallying point (which did not smack of purely political motivation) for opposition to the conflict. These factors came together as war first began to be brought into the living room nightly through television; for the first time in history the general public was witness to the consequences of a war fought halfway around the globe.

Not only did the conflict spotlight the *fact* of environmental damage, but it also raised questions of its legality. Indeed, the State Department's legal staff recommended that the defoliation operations be limited to the territory of South Vietnam, lest they be interpreted later as

²⁵TS Brief, *supra* note 24, at 102.

²⁶ Although this intent was not described in the TS Brief, it was noted by Seymour Hersh. He specifically cited a source as stating that a method of treating clouds with an acid chemical which would foil the operation of North Vietnamese radars had been developed. Other purposes of the rain-making included, according to the Hersh report, providing "cover for infiltration of South Vietnamese commando and intelligence teams," "serving as a spoiler for North Vietnamese attacks and raids," "altering or tailoring the rain patterns over North Vietnam and Laos to aid United States bombing missions" and "diverting North Vietnamese men and material from military operations to keep muddled roads and lines of communication in operation." Seymour M. Hersh, *Rainmaking is Used As a Weapon by U.S.*, N.Y. Times, July 3, 1972, at A1, A2.

²⁷ The Air Force asserted that rainfall increased by 30% in some locations, but admitted that "(w)hile this program had an effect on the primitive road conditions in these areas, the results were certainly limited and unverifiable. TS Brief, *supra* note 24, at 115, 120. Arthur Westing noted that "(a)lthough the military seemed satisfied with the level of success of its weather-modification operations in Indochina, a dispassionate arbiter would be hard put to recognize a basis for this optimism." Westing, *supra* note 19, at 56.

precedent for use by others elsewhere.²⁸ In the South, the operations would be of *de minimus* precedential effect because application of the chemicals was consensual.

Despite official sensitivity, environmental legal norms were still in a nascent stage.²⁹ Even at this late stage no law of war treaty mentioned the word “environment.” Predictably, calls for new law were soon heard. For example, Senator Claiborne Pell proposed a draft treaty to “prohibit and prevent, at any place, any environmental or geophysical modification activity as a weapon of war.”³⁰ He also recommended the prohibition of research aimed at the development of such weapons. In July 1973, his document was deemed a “sense of the Senate,”³¹ an important first step towards the Environmental Modification Convention (ENMOD) that came into force a mere five years later.³²

Particularly interesting was a proposal, this time emanating from the halls of academia, by Princeton’s Richard Falk. Adopted at the June 1972 “Emergency Conference Against Environmental Warfare in Indochina” in Stockholm, it included a Convention on Ecocide that criminalized many of the activities the United States engaged in during the war.³³ For instance, the convention defined ecocide as the use of: “chemical herbicides to defoliate and deforest

²⁸ George H. Aldrich, *Prospects for the United States Ratification of Additional Protocol I to the 1949 Geneva Conventions*, 85 Am. J. Int’l L. 1, 14 (1991).

²⁹ For instance, the use of Agent Orange continues to be characterized as an issue of primarily tort, rather than environmental, law. This point was noted in the U.S. Army’s post-Desert Storm/Shield legal report. U.S. Army Legal Services Agency, *The Desert Storm Assessment Team’s Report to the Judge Advocate General of the Army, sec. G (Environmental Law)*, (Apr. 22, 1992), at 1 [hereinafter *Army Assessment*].

³⁰ Draft Treaty, art. I(1). The treaty is printed in S. Res. 71, 93d Cong., 1st Sess. (1973) (enacted).

³¹ S. Res. 71, *supra* note 30.

³² Convention on the Prohibition of Military or Any Other Use of Environmental Modification Techniques, Dec. 10, 1976, 31 U.S.T. 333, 1108 U.N.T.S. 152, *reprinted in* 16 I.L.M. 88 (1977) [hereinafter *ENMOD*].

³³ Proposed International Convention on the Crime of Ecocide and Draft Protocol on Environmental Warfare, Adopted by the Emergency Conference Against Environmental Warfare in Indochina, Stockholm, June 1972, *reprinted in* 4 Bulletin of Peace Proposals 14 (1973), and in V International Law and World Order: Basic Documents, Document V.K.1., (Burns H. Weston ed., 1994).

natural forests; bombs and artillery in such quantity, density, or size as to impair the quality of the soil or to enhance the prospect of disease dangerous to human beings, animals, or crops; bulldozing...to destroy large tracts of forest or cropland for military purposes; or techniques designed to increase or decrease rainfall or otherwise modify weather as a weapon of war.” The forcible removal of human beings or animals from their habitats and employment of weapons of mass destruction (WMD) were also forbidden.³⁴ By Professor Falk’s proposal, those who committed such acts, or were otherwise culpable for their commission, would at minimum be removed from any position of public trust.³⁵ He also recommended passage of national implementing legislation, as well as establishment of a Commission for the Investigation of Ecocide.³⁶ In certain cases, the U.N. would be called upon to take “appropriate action” under the U.N. Charter to prevent and suppress ecocide.³⁷ This implied that ecocide could amount to a breach of peace or act of aggression, thereby possibly meriting a forceful response under Article 42 of the Charter.³⁸

The conference also adopted the Draft Protocol on Environmental Warfare.³⁹ It began by claiming that “environmental warfare has been condemned throughout the world.” That being so,

³⁴ *Id.* art. II.

³⁵ *Id.* art. IV.

³⁶ *Id.* art. VI.

³⁷ *Id.* art. IX.

³⁸ “The Security Council shall determine the existence of any threat to the peace, breach of peace, or act of aggression and shall make recommendations, or decide what measures shall be taken in accordance with Articles 41 and 42, to maintain or restore international peace and security.” U.N. Charter, art. 39. “The Security Council may decide what measures not involving the use of force are to be employed to give effect to its decisions....” *Id.* art. 41. “Should the Security Council consider that measures provided for in Article 41 would be inadequate or have proven to be inadequate, it may take such action by air, sea, or land forces as may be necessary to maintain or restore international peace and security.” *Id.* art. 42.

³⁹ Draft Protocol on Environmental Warfare, Adopted by the Emergency Conference Against Environmental Warfare in Indochina, Stockholm, June 1972, *reprinted in* Weston, *supra* note 33, at Document V.K.1

signatories agreed “as a matter of conscience and of law to refrain from the use of tactics and weapons of war that inflict irreparable harm to the environment or disrupt fundamental ecological relationships.” Methods specifically prohibited included spreading chemical defoliants, bulldozing, employing conventional munitions that cause extensive cratering and WMD use. The protocol deemed violations a crime under international law, an important characterization that allows for individual responsibility.⁴⁰

Though the community of nations never formally adopted either proposal, it was clear by now that law to protect the environment -- the newest “victim” of war -- was on the horizon. A two track approach was taken. First, negotiations to limit the *use* of the environment as a weapon led to the Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques Convention (ENMOD); opened for signature in 1977, it came into force for the United States in January of 1980. By the terms of ENMOD, states agree not to “engage in military or any other hostile use of environmental modification techniques having wide-spread, long-lasting or severe effects as the means of destruction, damage or injury” to other parties.⁴¹ Reminiscent of the treaty called for by Senator Pell in 1972, ENMOD was the first environment specific law of armed conflict. However, it does not necessarily protect the environment proper. Instead, ENMOD only proscribes modifying environmental processes as method of warfare if significant destruction, damage or injury would result. Whether that damage is to the environment or not is irrelevant, though in most cases it would be.

⁴⁰*Id.* For Professor Falk’s views on ecocide and environmental warfare (as well as reprints of both proposed documents), see Richard A. Falk, *Environmental Warfare and Ecocide*, in 4 *The Vietnam War and International Law* 287 (Richard Falk ed., 1976); and Richard A. Falk, *Environmental Warfare and Ecocide: Facts Appraisal and Proposals*, 60 *Belgian Rev. Int’l L.* 1 (1973).

⁴¹ ENMOD, *supra* note 32, art. I(1).

Contemporaneously, the second track was taken. The Vietnam experience had highlighted the need to account in the law of war for the new methods, means and characteristics of armed conflict. Existing international conventions, most notably the Hague and Geneva Conventions, were responsive to a genre of warfare very different from that prevalent in Vietnam. Therefore, the international community gathered between 1974 and 1977 under the auspices of the International Committee of the Red Cross (ICRC) to bring the law of war up to date. This Diplomatic Conference on the Reaffirmation and Development of International Humanitarian Law Applicable in Armed Conflicts met on four occasions to draft Protocols Additional I and II to the Geneva Conventions.⁴²

Protocol I, governing international armed conflict, is central to the environmental law of war, for it contains the only specific prohibitions on damaging (vice using) the environment. Article 35(3) provides that “(i)t is prohibited to employ methods or means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the environment.”⁴³ Later, in Article 55, the protocol devotes an entire article to the subject:

1. Care shall be taken in warfare to protect the natural environment against widespread, long-term and severe damage. This protection includes a prohibition of the use of methods or means of warfare which are intended or may be expected to cause such damage to the natural environment and thereby to prejudice the health or survival of the population.

2. Attacks against the natural environment by way of reprisals are prohibited.⁴⁴

At this point, a directional trend can begin to be discerned. Prior to the Vietnam experience, attitudes towards the environment were purely anthropocentric. The lack of any

⁴² Protocols I and II, *supra* note 8.

⁴³ Protocol I, *supra* note 8, art. 35(3).

⁴⁴ *Id.* art. 55.

mention of the environment in the law of war suggests that it was understood solely in its utilitarian context. Indeed, it would be difficult to assert that the international community viewed the environment as a distinct entity at all. However, by the end of the Vietnam War the concept of an "environment" had been grasped, albeit primarily anthropocentrically. This perspective is evident in ENMOD's prohibition on use of (but not damage to) the environment and in Article 55's requirement that the threshold environmental damage prejudice the population's health or survival. Only in Article 35(3) does a prescription appear divorced from impact on the human population. By its formula, the question is the *degree* of damage to the environment, rather than its *effect* in human terms. As shall be discussed *infra*, the drafters included Article 35(3) for the very purpose of appeasing intrinsic value advocates who urged protection of the environment *per se*. Thus, while the cognitive perspective was primarily anthropocentric in the immediate post-Vietnam period, it was an anthropocentrism increasingly sensitized to the existence of the environment *qua* environment. Further, the first glimpses of an evolutionary trend in the direction of intrinsic valuation were apparent. It should be noted that the United States, although a participant in the negotiations, has elected not to ratify Protocol I, a decision motivated in part by opposition to its environmental provisions.⁴⁵

⁴⁵ For articles bearing on the debate over ratification, see Aldrich, *supra* note 28; George H. Aldrich, *Progressive Development of the Laws of War: A Reply to Criticisms of the 1977 Geneva Protocol I*, 23 Va. J. Int'l L. 693 (1986); David A. Bagley, *Ratification of Protocol I to the Geneva Conventions of 1949 by the United States: Discussion and Suggestions for the American Lawyer-Citizen*, 11 Loy. L.A. Int'l & Comp. L.J. 439 (1989); Hans-Peter Gasser, *Agora: The U.S. Decision Not to Ratify Protocol I to the Geneva Conventions on the Protection of War Victims*, 81 Am. J. Int'l L. 910 (1987); Michael J. Matheson, *The United States Position on the Relation of Customary International Law to the 1977 Protocols Additional to the 1949 Geneva Conventions*, 2 Am. U.J. Int'l L. & Pol'y 419 (1987); Guy B. Roberts, *The New Rules for Waging War: The Case Against Ratification of Additional Protocol I*, 26 Va. J. Int'l L. 109 (1985); William G. Schmidt, *The Protection of Victims of International Armed Conflict: Protocol I Additional to the Geneva Convention*, 24 A.F.L. Rev. 189 (1984); and Abraham D. Sofaer, *Agora: The U.S. Decision Not to Ratify Protocol I to the Geneva Conventions on the Protection of War Victims*, 82 Am. J. Int'l L. 784 (1988).

In the 1980s, efforts to strengthen the environmental law of war faded. This was true despite significant environmental damage during the Iran-Iraq War, in particular oil spills caused by the tanker war. Between May 1980 and December 1987 some 447 tankers were attacked in the Persian Gulf.⁴⁶ Also attacked were oil facilities, both ashore and offshore. To cite but one example of the damage these operations resulted in, raids against Iran's Nowruz oil drilling facility in 1983 led to release of two million barrels of oil into the Persian Gulf. Iraq's refusal of a temporary truce to allow the wells to be capped compounded the situation.⁴⁷ Yet, even with the pervasive environmental destruction, the international legal community focused far more attention on neutrality issues.⁴⁸ Perhaps this was because the leading nations of the world were non-belligerents during the Iran-Iraq War. By framing tanker destruction in neutrality terms, neutrals could concentrate on maintaining a free flow of oil, an emphasis which had the practical effect of indirectly fostering broader environmental interests. Another possible reason they weighted neutrality issues more heavily is that while the West tended to "support" Iraq, this support was tempered by concern that one of the two parties might emerge from the conflict as a regional hegemon. The prevailing paradigm of the Iran-Iraq War would shift dramatically with the Iraqi invasion of Kuwait in 1990.

⁴⁶ In 1984 alone, over two million tons of oil was spilled into the Gulf. Phillipe Antoine, *International Humanitarian Law and the Protection of the Environment in Time of Armed Conflict*, Int'l Rev. Red Cross, Nov.-Dec. 1992, at 517, 530. Mr. Antoine asserts that the damage caused during the tanker war rose to the level of "widespread, long-term and severe," though neither Iran nor Iraq were party to Protocol I. *Id.*

⁴⁷ 28 Kessing's Contemporary Archives 32594-95 (1983). See also Margaret T. Okorodudu-Fubara, *Oil in the Persian Gulf: Legal Appraisal of an Environmental Warfare*, 23 St. Mary's L.J. 123, 129 (1991); George K. Walker, Oceans Law, the Maritime Environment, and the Law of Naval Warfare, NWC Symposium Paper, *supra* note 12, at 2.

⁴⁸ The issue of neutrality was paramount in consideration of the tanker war.

C. The Gulf War

The Gulf War brought warfare's environmental destructiveness to the very forefront of international attention. Even before the air campaign commenced on 17 January 1991, there were clear indications that, environmentally speaking, this conflict would represent a new model. As early as September 1990, Saddam Hussein threatened to destroy oil fields if Coalition forces attempted to expel him from Kuwait.⁴⁹ Other senior Iraqi leaders made similar pronouncements. Two days before Christmas, for example, the Iraqi Defense Minister, Said Tuma Abbas, responded to Secretary of Defense Cheney's statement that the "clock is ticking" by boasting that "Cheney will see how land burns under the feet of his troops and stooges."⁵⁰ In fact, that very month the Iraqis detonated six Kuwaiti oil wells to practice for later operations.⁵¹

Those beyond the Iraqi borders viewed these bellicose statements as more than mere puffery. Among the most vocal in singling out the environmental threat was King Hussein of Jordan. Speaking in November at the Second World Climate Conference in Geneva, he pointed to the possibility of widespread environmental destruction to urge against war.⁵² The Secretary

⁴⁹ On September 23, 1990, the Iraqis released a statement following the joint meeting of the Iraqi Revolution Command Council and the regional command of the Arab Socialist Baath Party, chaired by Saddam Hussein. It read, in part, that "(t)he oil, its areas, and Israel will be transformed into something different from what they are now. Thus will be the deluge....The oil areas in Saudi Arabia and in other parts of the states of the region and all the oil installations will be rendered incapable of responding to the needs of those who came to us as occupiers in order to usurp our sovereignty, dignity and wealth." *Partial Text of Statement by Iraq's Revolution Command*, Reuters, Sept. 23, 1990, available in LEXIS/NEXIS, News Library, ALLNWS File. See also Nora Boustany, *Saddam Threatens Mideast's Oil Fields: "Choking" Embargo Cited as Justification*, Wash. Post, Sept. 24, 1990, at A1.

⁵⁰ Gayle Young, *Cheney: "Clock is Ticking" for War*, U.P.I., Dec. 23, 1990, available in LEXIS/NEXIS, News Library, ALLNWS File.

⁵¹ William M. Arkin, *The Environmental Threat of Military Operations*, NWC Symposium Paper, *supra* note 12, at 6.

⁵² King Hussein warned of an "environmental catastrophe." *Gulf War Threatens Environment*, Jordan King Warns, L.A. Times, Nov. 6, 1990, at P2.

General of Jordan's Higher Council for Science and Technology, Dr. Abdullah Toukan, echoed the theme at a scientific symposium held in London in January. He warned of up to two million barrels of oil per day in spillage if the Gulf's oil installations were destroyed. At the same meeting, John Cox, a chemical engineer experienced in the field, suggested that igniting the oil installations could generate smoke equal to that produced by a nuclear explosion, blot out sunlight and, thereby, cause a drop in temperatures by as much as 68 degrees.⁵³

Oxford's Adam Roberts has very astutely noted that the environmental issue soon took on political overtones. Those concerned with the environmental impact of hostilities generally opposed the war, whereas supporters of Iraqi expulsion by force of arms devoted little attention to environmental matters. For Professor Roberts, this "polarization" had an important consequence: "There was little if any public discussion of the means which might be used, if there was a war, to dissuade Iraq from engaging in environmentally destructive acts; and little reference to the laws of war as one possible basis for seeking limitations of this kind."⁵⁴ As one possible remedy, he suggested an unequivocal pre-Desert Storm pronouncement by the United Nations that the laws of war were applicable to environmental damage.⁵⁵

⁵³ *Scientists Warn of Environmental Disaster from a Gulf War*, Reuters, Jan. 2, 1991, available in LEXIS/NEXIS, News Library, ALLNWS File. See also *Experts Warn of Global Fallout from Warfare: Environment; Scientists Say that Smoke from Blazing Kuwait Oil Fields Could Affect the Climate*, L.A. Times, Jan. 3, 1991, at A8.

⁵⁴ Roberts, *supra* note 16, at 30-31.

⁵⁵ "New environmental threats and public environmental concerns strengthened the case for having a clear statement about how environmental destruction ran counter to older as well as newer agreements on the laws of war." *Id.* at 33. Along these lines, Professor Roberts makes a very good point.

The failure to prevent damage to the environment in the 1991 Gulf War was in marked contrast to a degree of success in preventing the conflict from getting out of hand in some other respects: many hostages, seized in the early weeks of the Iraqi occupation of Kuwait, were released before war broke out; Iraq was kept isolated; the war was kept within geographical limits and was brought to a swift conclusion; and gas, bacteriological and nuclear weapons were not used. Why was there so conspicuous a failure over matters relating to the environment?

Id. at 4.

At this late date, it is doubtful that putting Iraqi leaders on notice would have yielded significant deterrent returns. After all, the Iraqis had already violated international law with impunity on multiple occasions. For example, the seizure of foreign civilians and use of them as human shields were breaches beyond even theoretical doubt. Their subsequent release can be attributed more to "rational" decision making than to any last minute epiphany that the acts were unlawful. The same can be said with regard to chemical weapons. Was it law or the only slightly veiled threat of retaliation with WMD that deterred Saddam?

To complicate matters, the law in this area was (and still is) unsettled, a point Iraq probably grasped better than most given its experiences during the war with Iran. An eleventh hour proclamation on the environmental law of war by the U.N., which had proven impotent during the Cold War and was now being informally led by a Protocol I non-signatory, would hardly have proven a panacea. Furthermore, the last time international war crimes trials had been held was over 40 years earlier in the aftermath of the Second World War. Therefore, not only was the law uncertain (a point discussed more fully *infra*), but there was also evidence of the international community's unwillingness to impose state or individual responsibility following armed conflict. That said, Professor Roberts' suggestion is well-taken. Emphasizing the law of war would have hurt nothing, was the right thing to do and might have presented Saddam Hussein with reason to pause because his actions had minimal military value. It certainly would have strengthened the basis for post-hostilities condemnation by the international community.

Just prior to commencement of the air campaign President Bush *did* specifically address destruction of oil fields and installations. In the now famous letter from President Bush to Saddam Hussein, which Iraqi Foreign Minister Tariq Aziz refused to accept from Secretary of

State James Baker in Geneva on 9 January, the President warned that “(y)ou and your country will pay a terrible price if you order unconscionable acts of this sort.”⁵⁶ The International Committee of the Red Cross (ICRC) also endeavored to focus attention on what it felt to be the potential belligerents’ international legal obligations. It issued its most comprehensive reminder in the form of a note verbale (with attached memorandum of law) on 14 December, not long after passage of U.N. Resolution 678.⁵⁷ The resolution authorized the use of “all necessary means” to implement Resolution 660 (the demand for Iraqi withdrawal)⁵⁸ and restore peace and security. Each of the 164 parties to the 1949 Geneva Conventions received the note verbale.

In it, the ICRC reiterated numerous customary and conventional laws of armed conflict. The memorandum of law specifically cited Article 55 of Protocol I, and invited states which were not a party to the protocol (e.g., Iraq, France, the United Kingdom and the United States) to respect it. It also urged compliance with Article 56, a provision that extends protection to works and installations containing dangerous forces, such as dams and nuclear generating stations.⁵⁹ This protection, as shall be seen, has important environmental implications. When the air campaign was launched in January, the ICRC issued yet another appeal to respect the law of

⁵⁶*Text of Bush Letter to Saddam Hussein*, U.P.I., Jan. 12, 1991, available in LEXIS/NEXIS, News Library, ALLNWS File. Additionally, destruction of the Kuwaiti oil resources was one of the three “unconscionable acts” for which the Iraqi leadership would be held personally responsible, the others being use of chemical/biological weapons and terrorism. Arkin, *supra* note 51, at 2-3 citing National Security Directive (NSD) 54, Jan. 15, 1991. NSD 54 remains classified, but is described generally in Christopher Simpson, *National Security Directives of the Reagan and Bush Administrations: The Declassified History of the U.S. Political and Military Policy, 1981-1991* (1995), at 947. NSD 54 authorized offensive operations against Iraqi forces.

⁵⁷ S.C. Res. 678 (Nov. 29, 1990), U.N. Doc. S/RES/ 678 (1990), reprinted in 29 I.L.M. 1565 (1990). On this resolution, see Burns Weston, *Security Council Resolution 678 and Persian Gulf Decision Making: Precarious Legitimacy*, 85 Am. J. Int’l L. 516 (1991).

⁵⁸S.C. Res. 660 (Aug. 2, 1990), U.N. Doc. S/RES/660 (1990), reprinted in 29 I.L.M. 1325 (1990).

⁵⁹ICRC, Note Verbale and Memorandum of 14 December 1990, reprinted in Int’l Rev. Red Cross, Jan.-Feb. 1991, at 22, 22-26.

war.⁶⁰ On 1 February, with oil now pouring into the Persian Gulf, it issued its strongest pronouncement. Warning that the law of war “might be swept aside by the political, military or propaganda demands of the moment,” it emphasized that “(t)he right to choose methods or means of warfare is not unlimited. Weapons having indiscriminate effects and those likely to cause disproportionate suffering and damage to the environment are prohibited.”⁶¹

The warnings and pleas had little effect. Two days after the air war kicked off, the Iraqis began pumping oil into the Persian Gulf from Sea Island Terminal, an off-shore oil loading dock. The flow was stemmed only after Coalition air forces set the terminal on fire.⁶² Not to be deterred, the Iraqis exacerbated the pollution by dumping oil into the Gulf from five tankers moored at Mina al-Ahmadi. The Defense Department estimates that by the end of the conflict the Iraqis had intentionally spilled between seven and nine million barrels of oil.⁶³ It eventually covered approximately 600 square miles of water and spread along 300 miles of shoreline.⁶⁴ To place the Iraqi actions in context, the spill was the largest, intentional or accidental, in history.

Not all of the oil that found its way into the Persian Gulf derived from Iraqi actions. In fact, the first oil spill of the war may have come on the morning of the 17th when U.S. Navy aircraft bombed an Iraqi oil platform at Mina al-Bakr. A week later, Navy planes hit the

⁶⁰ICRC, Appeal of 17 January 1991, *reprinted in* Int'l Rev. Red Cross, Jan.-Feb. 1991, at 26.

⁶¹ICRC, Appeal of 1 February 1991, *reprinted in* Int'l Rev. Red Cross, Jan.-Feb. 1991, at 27.

⁶² Ras al-Ghar, *Vital Saudi Water Plant Prepares for Oil Slick*, Christian Science Monitor, Feb. 1, 1991, at 1.

⁶³ Department of Defense, *Conduct of the Persian Gulf War: Final Report to Congress* (1992), at O-26 [hereinafter DOD Report]. A Greenpeace study cited the same figure, but noted that smaller quantities of oil continued to leak into the Gulf until May or early June of 1991. William M. Arkin et al., *On Impact: Modern Warfare and the Environment: A Case Study of the Gulf War 2-3* (1991) [hereinafter Greenpeace Study]. The size of the spill is also discussed in Kuwait Environment Protection Council, *State of the Environment Report: A Case Study of Iraqi Regime Crimes Against the Environment*, November 1991, at 28-30.

⁶⁴ Walter G. Sharp, *The Effective Deterrence of Environmental Damage During Armed Conflict: A Case Analysis of the Persian Gulf War*, 137 Mil. L. Rev. 1, 41 (1992).

Amuriyah, an Iraqi tanker that was refueling an air-cushioned landing craft. French aircraft struck a tanker of their own that same day. Other air attacks may also have contributed to the scope of the spills.⁶⁵ These operations are, however, easily distinguishable from the Iraqi actions. Not only were Coalition caused releases dwarfed by those of the Iraqis, but there is no evidence to suggest purposeful environmental damage by Coalition forces. From a legal perspective, these are critical facts, for there is a clear difference in the law between incidental (*collateral* in law of war terminology) damage and that caused intentionally.

Soon after Desert Storm began, the Iraqis started destroying oil wells to complement their maritime misconduct. For instance, on 21 January they blew up 60 wells in the vicinity of Al Wafra in Kuwait. They also set fire to the Mina ash Shuaybah and Mina Abd Allah oil installations on the coast.⁶⁶ Nevertheless, it was not until just prior to the start of the ground war on 23-24 February that systematic destruction began in earnest, with the Al Burgan oil fields suffering the heaviest toll. By the end of hostilities, the Iraqis had damaged or destroyed 590 oil well heads. Of these, 508 were set afire and 82 were damaged in a manner that caused oil to flow from them.⁶⁷ The height of the blazes was in the May-June time frame, a period during which four and one half million barrels of oil per day were lost to the fires. Several comparisons may

⁶⁵ Arkin, *supra* note 51, at 7-8. Mr. Arkin has noted, "What the public heard during the war was that around 19 January, Iraq opened the valves at the Sea Island Terminal, pumping oil directly into the Gulf." *Id.* at 8. In fact, the Coalition contribution to the spill was reported. For instance, on 21 February 1991, the Associated Press reported that Coalition bombing missions may have been responsible for 30% of the oil spilled. Martin Marris, *Sophisticated Radar to Gauge Size of Oil Spill*, A.P., Feb. 21, 1991, available in LEXIS/NEXIS, News Library, ALLNWS File.

⁶⁶ Arkin, *supra* note 51, at 6-7.

⁶⁷ DOD Report, *supra* note 63, at O-26. Note that estimates on the number of wells damaged or destroyed by the Iraqis differs from source to source. For instance, Walter Sharp reports the figure as 732, with 650 catching fire. Sharp, *supra* note 64, at 40-41. The Kuwait government reported that, after 26 February, 613 wells were set on fire, 76 were gushing and 99 were damaged. Kuwait Environment Protection Council, *supra* note 63, at 1-3 and fig. 2.

illustrate the gravity of this situation. The oil fires generated 86 billion watts of heat, roughly equal to that of 500 forest fires. Daily soot release into the atmosphere, which drifted as far away as the Himalayas, was the equivalent of 10% of global biomass burning, while sulfur dioxide output approximated 57% of the emissions from electrical utilities. Carbon dioxide production was at the level of 2% of the fossil fuel and biomass burning that occurs worldwide on a daily basis.⁶⁸

The international community mounted an aggressive campaign to contain the spills and put out the fires. Many U.S. government agencies, with the U.S. Coast Guard at the forefront, took part in the valiant recovery operation. Foreign and international organizations active in the effort included the Saudi Meteorology and Environmental Protection Administration and the International Maritime Organization. Ultimately, two million barrels of oil were recovered from that released into the Gulf.⁶⁹ The battle against the burning oil wells also went well. Nearly 30 fire fighting teams from 10 countries attacked the blazes, extinguishing them much more quickly than had been expected.⁷⁰

Despite predictions of doom such as those offered at the scientific symposium in London, the environmental damage was not catastrophic. Warnings of drastic drops in temperature, and the effect this might have on wind currents, were very much overblown. Similarly, portends of severe human health problems and wholesale destruction of animal habitats proved exaggerated.⁷¹

⁶⁸ Sylvia A. Earle, *Persian Gulf Pollution: Assessing the Damage One Year Later*, Nat'l Geographic, Feb. 1992, at 122.

⁶⁹ Adam Roberts, *Environmental Destruction in the 1991 Gulf War*, Int'l Rev. Red Cross, Nov.-Dec. 1992, at 538, 549.

⁷⁰ John Norton Moore, *Crisis in the Gulf: Enforcing the Rule of Law* 80 (1992).

⁷¹ The United Nations Environment Program reported in May 1992 that the oil well fires did not affect the global climate and that the pollution they caused was not severe enough to result in major human health problems. Governing Council of the United Nations Environment Programme, *State of the Environment: Updated Scientific*

Nevertheless, the pooling oil, oil mist and settling soot did damage the terrestrial environment, particularly the fragile desert ecosystem. In many areas the annual seed flora failed to set, and perennial vegetation, critically important because its roots are a food source for many animals, was often damaged or died. Additionally, oiling harmed intertidal habitats such as mangroves, beaches and mud flats. Though no major threat to human health at the individual level surfaced, the increase in inhalable particulants caused by the fires was significant when considered in terms of exposure of a large population. This exposure could potentially cause an increase in the prevalence and severity of disease, both chronic and acute.⁷² Of course, the overall assessment may change as unexplained health problems begin to develop among those who were present during the conflict.

The question of why the Iraqis committed the misdeeds remains unresolved. As will be discussed later, the degree of military advantage obtained from an act during war is a critical data point in assessing its lawfulness. The Defense Department has taken the position that the Iraqi actions were of little military utility. In arriving at this conclusion, it explored a number of possible military benefits. One was the use of the oil spills to foil Coalition amphibious operations. A secondary purpose may have been to foul desalinization plants in order to disrupt military activities ashore in Saudi Arabia and/or cause unrest among the civilian population by

Report on the Environmental Effects of the Conflict Between Iraq and Kuwait, 17th Sess., May 10, 1992, U.N. Doc. UNEP/GC.17/Inf.9 (1993), at 12-13.

⁷² On the impact of the spills generally, see United Nations Environment Program, Report on the Inter-Agency Plan of Action, Oct. 12, 1991, *reprinted in* Research Centre for International Law, University of Cambridge, Iraq and Kuwait: The Hostilities and their Aftermath 339 (M. Weller ed. 1991) [hereinafter UNEP Report].

depriving it of fresh water.⁷³ As to the fires, they could arguably have been intended to create obscurants to shield Iraqi forces against air and ground attack.⁷⁴

The DOD concluded, however, that the actions were probably purely punitive in nature, “environmental terrorism” to use President Bush’s characterization.⁷⁵ Addressing the issue in its official Gulf War Report, the Department points out that the oil spills had negligible effect on Coalition naval operations. If, for example, the goal was to frustrate a Coalition landing force, then the operation was very poorly conceived. The oil well fires present even more compelling circumstantial evidence of a malevolent Iraqi intent. Assuming for the sake of argument that the purpose was simply to create obscurants, why did they not just open the valves of the wells, allow the oil to pool, and then set it on fire? Instead, the Iraqis destroyed the wells in a manner that made it difficult to extinguish the resulting fires; this suggests a broader, longer term purpose than merely complicating immediate Coalition intelligence gathering, maneuver and attack.⁷⁶

A counter-argument might point out that since the wells were previously wired with explosives, blowing them up may have been the most expedient method of destruction in the face of the Coalition onslaught. Interestingly, the DOD Report queries why the Iraqis did not set their own Ar-Rumaylah oil fields, which lay just across the border, ablaze if the goal was obscuration.

⁷³A Senate Committee suggested that one possible explanation may also have been to act as “a tactical probe seeking to test allied forces and possibly disrupt them.” Senate Comm. on the Environment and Public Works -- Gulf Pollution Task Force, *The Environmental Aftermath of the Gulf War* 4 (1992).

⁷⁴DOD Report, *supra* note 63, at O-27.

⁷⁵President George Bush, State of the Union Address, Jan. 30, 199, Associated Press, *available in* LEXIS/NEXIS, News Library, ALLNWS File. Some have suggested that among the possible motives was “ecological terrorism in retaliation for the bombing.” Robert McFadden, *Oil Threatens Fishing and Water Supply*, *N.Y. Times*, Jan. 26, 1991, at 4. Yet another, albeit remote, possibility is that the motive was economic, i.e., that Iraq hoped to devastate a competitor, drive up the price of oil, or create an incentive for the removal of sanctions on its own oil exports.

⁷⁶DOD Report, *supra* note 63, at O-27.

This, the report contends, further evidences Iraq's punitive motivation.⁷⁷ From the perspective of "rational decision-making," the DOD Report falters here. Not knowing the course the war and post-war settlement would take, it would have made very little sense for Iraq to destroy its own primary resource merely for short term tactical and operational gain. Doing so would have been a very much different thing than destroying resources in an occupied territory it was about to be ejected from. The respective cost/benefit calculations hardly yield comparable results.

Greenpeace's published account of the conflict's environmental impact cites various sources to suggest that the Iraqi actions *may* have had military ends. For example, a Navy spokesman on the U.S.S. Midway reportedly admitted that the smoke precluded target acquisition in some cases. An F-15 pilot interviewed by the Associated Press reported the same effect. On one occasion the Iraqis supposedly even used the smoke to mask an attack from a burning oil field.⁷⁸ It is simply not difficult to imagine the problems that Iraq *might* have hoped the fires would create for the Coalition. To take this point a step further, it could even be argued that they were intended to take advantage of "weaknesses" in Coalition high-tech weapons. Blocking ambient light, e.g., diminishes the effectiveness of night vision goggles. Brightness also blinds them.⁷⁹ Smoke has the former effect, fire the latter. Similarly, smoke can foil guided munitions. Consider the difficulty, for instance, of using an electro-optical guided weapon on a smoke covered target.

⁷⁷*Id.* As has been pointed out, Iraq also damaged all of the twenty-six gathering centers used to separate oil, gas and water. This process is integral to oil production. Additionally, the Iraqis destroyed the wells' technical specifications. Sharp, *supra* note 64, at 45. If the purpose was military, the commentator asks, what would have justified such acts? One possibility is that the Iraqis wanted to deny their use to the Coalition forces and Kuwait. However, the commentator has the better argument.

⁷⁸Greenpeace Study, *supra* note 63, at 141-42.

⁷⁹Joel P. Kane, *Night Vision Goggles and Desert Storm*, Marine Corps Gazette, Feb. 1992, at 42.

Ultimately, there is little question that on various occasions Iraqi actions did affect Coalition military operations. There is also little question that they had minimal impact on the overall campaign. Given the difficulty of determining the intent of a dictator who remains in control of a closed society, probably the most objective interpretation of the spills and fires is that they *may* have been intended to achieve military advantages. Despite this *possibility*, damage so outweighed possible gains that the acts were wrongful anyway under international law.⁸⁰

As a final note, it is important to remember that although the spills and oil well fires stole the headlines, the war caused a great deal of additional environmental damage. Mines presented a particular problem. On many occasions, the Iraqis indiscriminately laid mine fields without adequately marking them or keeping accurate records of their locations. This made large areas of land impassable and posed a significant danger to humans and animals alike. Massive mine clearing efforts had to be mounted to return the land to its useable state. In areas controlled by Coalition forces after the war, such as the U.N. Security Zone in the north and Kuwait in the south, mine operations became an integral part of the intergovernmental and non-governmental organization relief efforts. To a somewhat lesser extent, the same is true of unexploded ordnance (UXOs), i.e., remnants of munitions which failed to explode. In order to grasp the scale of the situation, consider the fact that by March 1992 a single British company had alone removed one million mines and six thousand tons of ammunition from Kuwait.⁸¹

⁸⁰See discussion of the customary international law concepts of military necessity and proportionality at sec. III.C *infra*.

⁸¹Tony Horowitz, *These Men Dance Through Minefields*, The Wall Street Journal Europe, Jan. 21, 1992, at 1. The report also noted that in the year following the war, over 1,250 civilians were killed or wounded by explosive ordnance and 50 demolition specialists had died. *Id.*

Warfare also had much less sensational, though far from insignificant, effects on the environment. For instance, explosions and vehicle movement disrupted the desert ecosystem by loosening its surface, thereby rendering it susceptible to wind and water erosion. Enormous quantities of hazardous materials were also generated, ranging from dishwater and human waste to antifreeze and engine oil. Despite minor problems, U.S. military forces successfully handled these substances in an environmentally responsible manner.⁸² In retrospect, there is little doubt that the military the United States fielded was the most environmentally conscious in its history. There is equally little question that it has improved its performance since then.⁸³ By the same token, not all of the world's military forces, as anyone who has ever worked environmental issues with coalition partners understands, are fully sensitized to the environmental consequences of their operations. It is indisputable that many of our allies, and the Iraqis, caused significant environmental damage merely by their presence.

⁸²For instance, in one case a unit collected hazardous waste in barrels so as not to dump it improperly, but failed to mark the barrels. As a result, the contents had to be tested prior to disposal, an extremely costly and time consuming process. Army Assessment, *supra* note 29, at n.p.

⁸³The Army Assessment Report noted that,

(i)n general, there was an environmental awareness in the U.S. Army that caused us to consider the environmental consequences of military actions and kept us in concert with the law...This environmental awareness was carefully balanced against the often conflicting needs of waging war. In SWA (Southwest Asia), this translated to: Army policy is to adhere to U.S. environmental requirements if possible. As a result, environmental law issues were a SJA (Staff Judge Advocate) concern in theater as well as in the United States.

Id. There were problems, however, with environmental issues during deployment. As a result of the Operation Desert Shield, there were increased training and transportation requirements, which, of course, heightened the possibility of environmental damage. The Army Assessment noted that "Commanders (wanted) to do the right thing, but (had) a low tolerance for the impractical." Quoting an attorney from the Army's Operations and Law Division, the Assessment provides a clear indication of the mind set: "Our attitude at the time was the time was that, you know, we've got a deployment going on. To the extent we can respect the environment, that's fine, but it's not our job...We've got other things to do and essentially, I don't know if you call it what we did, 'stonewalling,' but essentially, the environmental issues, as far as we saw, went away for the long term." The Assessment characterized this statement not as "callousness to environmental concerns," but instead as "the frustration of trying to deal with environmental laws drafted without regard for military necessity." *Id.*

D. The Post Gulf-War Period

Serious attention to the issue of warfare's environmental impact was apparent as early as March of 1991 when Japan proposed adoption of a declaration of principles by the United Nations Environment Program's (UNEP) Governing Council proscribing the environmentally destructive techniques witnessed during the war. Simultaneously, France recommended a prohibition on targeting ecological areas and "world heritage monuments."⁸⁴ Both proposals were raised during UNEP's 16th Session two months later, a meeting at which Canada and Greenpeace announced sponsorship of conferences on the environmental law of war. Additionally, UNEP's Governing Council endorsed a prohibition on weapons that could "cause particularly serious effects on the environment."⁸⁵

That June, Greenpeace, in conjunction with the London School of Economics and the British Center for Defense Studies, convened its conference in London. For the conference, Professor Glen Plant of the London School of Economics developed a straw man outline of what the elements of a "Fifth Geneva Convention on the environment" might look like.⁸⁶ The most significant of its provisions dealt with methods and means of warfare. There, Professor Plant set forth four options for a threshold at which to prohibit environmentally destructive methods and means:

Option (a): prohibiting the employment of methods or means of warfare which are intended, or may be expected, to cause any (except *de minimus*, or "insignificant," or "unappreciable") damage to the environment;

⁸⁴James P. Terry, *The Environment and the Laws of War: The Impact of Desert Storm*, Naval War Coll. Rev., Winter 1992, at 61, 65.

⁸⁵UNEP, Governing Council, 16 Sess., Res. 16/11, Military Conflicts and the Environment, *reprinted in* UN Doc. A/46/25 (1991).

⁸⁶Elements of a New Convention on the Protection of the Environment in Time of Armed Conflict, in *Environmental Protection and the Law of War: A "Fifth Geneva" Convention on the Protection of the Environment in Time Of Armed Conflict* (Glen Plant ed. 1992).

Option (b): prohibiting it at least where the damage is widespread, long-lasting or severe;

Option (c): prohibiting it as under alternative (b), but adding a fourth alternative criterion, “significant” (or “appreciable”) and irreversible;

Option (d): choosing some mid-way position between alternative (b) and the existing high threshold as it appears in Article 35(3) of Protocol I.⁸⁷

Despite generating a great deal of attention, and Greenpeace support,⁸⁸ the international community has not mounted a serious effort to produce an agreement along the lines suggested.⁸⁹

The following month, the Canadian Ministry of External Affairs convened its own conference. The prevailing view of those who gathered in Ottawa was that the existing law adequately addressed the environmental effects of war. However, they recognized the need to consider the evolutionary nature of environmental concerns when applying existing prescriptions. In other words, the “value” of the environment would shift over time, an important factor in performing the balancing tests which dominate the law of war. The conference also took the position that peacetime norms generally remain applicable during hostilities, a topic developed more fully *infra*.⁹⁰

Of particular interest was the position of the U.S. participants. According to one account of the proceedings, they “carefully underscored the merits of the existing regime, which is based on the principles of military necessity and proportionality under the law of armed conflict. The U.S. concern regarding more restrictive environmental provisions was that they could be

⁸⁷ *Id* at pt. 1, ch. 1, sec. 1A.

⁸⁸ Sebia Hawkins, *Remarks During Panel Discussion: The Gulf War as a Weapon*, 1991 Proc. of the 85th Ann. Mtg. of the Am. Soc’y of Int’l L. 220.

⁸⁹ The proceedings of the conference are published in Plant, *supra* note 86.

⁹⁰ Hans-Peter Gasser, *For Better Protection of the Natural Environment in Armed Conflict: A Proposal for Action*, 89 Am. J. Int’l L. 637, 639 (1995).

implemented only at the expense of otherwise lawful military operations -- such as attacking targets which require fuel-air explosives (FAE) for their destruction.”⁹¹ This is a revealing statement because almost all treaty law (of war), except for that which merely codifies customary law, limits otherwise legal activities. *That is its purpose*, to render illegal those legal activities that become contrary to current normative values. Therefore, the U.S. participants were clearly taking the stance that the present law suffices, i.e., that it reflects the global community’s values and serves its aspirations.

Arguments of this nature represent a failure to see the forest for the trees. The mere fact that a regime might restrict useful means does not necessarily lead to the conclusion that it deserves rejection. Instead, the question is whether the new regime represents an *overall* step forward (however one defines “forward”). Furthermore, to argue for rejection of a legal regime because it would limit currently legal techniques is, in a sense, meaningless. The relevant factor is not the weapon used, but rather its target. Simply put, what are the consequences if a target cannot be struck, or be struck as effectively as otherwise would be the case?

Opposition to additional prescriptions on the grounds that they might limit *man’s* ability to employ otherwise lawful techniques is classically anthropocentric. By the Ottawa Conference, the lines of demarcation between two opposing camps had begun to solidify. One side, exemplified by Greenpeace, had adopted an intrinsic worth approach and took the stance that more law was needed. The anthropocentrics, on the other hand, hesitated to extend the law further out of concern that hands might be tied. In their view, the law should be left alone to evolve within the existing framework.

⁹¹Terry, *supra* note 84, at 65.

In December 1991 a third major international conference convened in Munich. Co-sponsored by the International Council of Environmental Law (ICEL) and the International Union for the Conservation of Nature and Natural Resources' (ICUN) Commission on Environmental Law (and financed in part by the Dutch government), it brought together a distinguished group of scholars and practitioners. The conference broke into two working groups, the first to consider how the effectiveness and implementation of existing legal instruments might be improved, the second to reflect on possible directions for further development of the legal regime governing the environmental law of war.⁹² They produced a series of innovative recommendations that are particularly useful in focusing attention on alternatives to the current state of affairs.

As to the present law, the conference recommended that Protocol I, and other relevant legal instruments, be universally accepted. It stressed the importance of customary international law norms (e.g., military necessity) to environmental protection, as well as the need to effectively disseminate the law of armed conflict. In an interesting comment, the final report also "noted that the current recognition that the environment itself is an object of legal protection in times of armed conflict implies that traditional perceptions of proportionality and military necessity have become obsolete."⁹³ This assertion is a bit inartfully stated, for it would have been more accurate to note that the traditional perceptions are *evolving*. Nevertheless, the statement evidences movement along the continuum between the anthropocentric and intrinsic value cognitive perspectives. It is based on the proposition that the environment *per se* should be protected; thus, the environment *must* exhibit autonomous existence. However, the recommendation does not go

⁹²International Council of Environmental Law, Law Concerning the Protection of the Environment in Times of Armed Conflict, Consultation, 13-15 December 1991, Final Report (n.d., unpublished) [hereinafter Munich Report].

⁹³*Id.* para. 2.

so far as to suggest that the environment should be safeguarded regardless of any contribution, or lack thereof, it makes to the human condition.

In terms of further development of the law, a number of innovative recommendations were proffered. The conference report began by proposing that any new law be based on protection of the environment *per se*.⁹⁴ Again, while this is not necessarily an intrinsic value perspective, it does lean in that direction. Although there was no recommendation for a new *convention*, the report did suggest compilation of two lists. The first would consist of activities during hostilities that could harm the environment, some of which would be absolutely forbidden, with others allowed only conditionally. Reflecting the desire to protect the environment *per se*, forbidden acts include: “(i) intentional attacks on the environment; (ii) the manipulation of natural processes causing environmental damage; and (iii) significant collateral damage to the environment.”⁹⁵ Violations would constitute grave breaches under international law, thereby imbuing all states with the jurisdictional competence to seize and try alleged offenders.

The second list would consist of a registry of protected areas. Though criteria for inclusion would have to be developed, inventories such as the U.N. List of National Parks and Equivalent Reserves, the Ramsar Wetlands of International Importance, the UNESCO Biosphere Reserves and the Council of Europe’s Biogenic Reserves could be adopted immediately. As to areas not on one of these preexisting lists, studies would have to be conducted to determine their vulnerability to military related activities. Ultimately, areas selected for protection would be annotated on maps and marked with distinctive symbology.⁹⁶

⁹⁴*Id.* para. 10.

⁹⁵*Id.* para. 13(a).

⁹⁶*Id.* para. 13(b).

The report also urged states to, in light of technological advances, rethink and revise targeting practices. As an example, it pointed to the sinking of oil tankers. Noting the myriad of methods for preventing the delivery of oil to an adversary, the group argued that actual destruction of vessels should be avoided. Specifically proscribed as targets were sites which contained dangerous forces or in which ultra hazardous activities were carried out.⁹⁷ This restriction harkens back to Article 56 of Protocol I, discussed *infra*, which limits how and when works containing “dangerous forces” can be attacked.⁹⁸ However, whereas Article 56 is usually interpreted as limited to dams, dikes and nuclear electrical generating stations,⁹⁹ the Munich proposal would extend protection beyond those categories. For instance, oil reserves were cited as protected targets, an illustration clearly selected with the Gulf War experience in mind. The group was similarly addressing practices from that war when they recommended prohibiting the targeting of “potentially dangerous” sites, i.e., those essential to either human health or the environment. Examples include water purification facilities and sewage treatment plants.¹⁰⁰

To enforce the prohibitions, the conference recommended imposition of state responsibility for either actual or potential damage. Potential damage would be measured in terms of likelihood of occurrence and magnitude of harm.¹⁰¹ Characterizing it as actionable represents a novel approach to the issue of responsibility, for under international law states are seldom responsible for future damage that is speculative. As the report noted, the concept of responsibility would have to be refined by states, as well as various national and international,

⁹⁷*Id.* para. 16.

⁹⁸Protocol I, *supra* note 8, art. 56(1).

⁹⁹*See infra* sec. III.C.1.

¹⁰⁰Munich Report, *supra* note 92, para. 16 (at note).

¹⁰¹*Id.*

governmental and non-governmental organizations, "in order to make it fully operational."¹⁰²

Certainly, clarifying what is meant by potential damage would be an important facet of that process. So too would crafting remedies. The group recommended a scheme whereby damaged or destroyed aspects of the environment would be replaced or restored to a pre-war level. When restoration was not possible, "compensation in kind would be required."¹⁰³

Finally, the Munich Conference took on the *jus ad bellum* issue of when environmental damage amounts to a threat to, or breach of, peace, a characterization which permits response under the United Nations Charter.¹⁰⁴ In particular, it included threatened or actual damage to "the commons" in the category of threat/breach.¹⁰⁵ The term extends to areas such as the high seas which are *res communes*. Beyond singling out the matter as an issue of importance, and blandly stating the quite obvious proposition that in the event of a threat or breach "appropriate measures" should be taken, little else was accomplished regarding the *jus ad bellum*. Nevertheless, considered in its entirety, the Munich Conference was significant in that it generated a consensus product consisting of substantive recommendations. Though far from likely to be adopted by the international community *in toto* any time soon, its recommendations are quite useful as a point of departure in discussions of how new law might be shaped.

A fourth conference of significance, although dedicated to environmental law issues extending well beyond armed conflict, was the June 1992 United Nations Conference on the Environment and Development in Rio de Janeiro. It issued the Rio Declaration, Article 24 of

¹⁰²*Id.*

¹⁰³*Id.* para 18.

¹⁰⁴U.N. Charter art. 39.

¹⁰⁵*Id.* para. 17.

which specifically addressed environmental concerns in warfare: "Warfare is inherently destructive of sustainable development. States shall therefore respect international law providing protection for the environment in times of armed conflict and cooperate in its further development, as necessary."¹⁰⁶ The compromise character of the declaration is apparent. It responds to claims of the law's adequacy when it urges respect, but evidences a revisionist flavor by encouraging cooperation in its continued development.

As the various conferences were being held, the United Nations proper was addressing the matter. The effort began in earnest in July 1991 when the Jordanian representative forwarded a note verbale to the Secretary General faulting the ENMOD Convention for its ineffectiveness in preventing Gulf War environmental damage. Claiming that the convention was so vague and over broad as to be unenforceable, Jordan also criticized the lack of any dispute resolution mechanism in the ENMOD regime.¹⁰⁷ To remedy these shortcomings, it urged creation of a committee to examine the environmental law of war and make recommendations for its improvement. In doing so, Jordan held out the drafting of a new treaty as one remedial option.¹⁰⁸

The General Assembly decided to refer the matter to the Sixth (Legal) Committee for consideration, which in turn placed the item on its 1991 agenda under the title "Exploitation of the Environment as a Weapon in Time of War."¹⁰⁹ Jordan, emphasizing that the issue was broader

¹⁰⁶Rio Declaration on Environment and Development, UN Doc. A/CONF.151/26 (vol. I) (1992), *reprinted in* 31 I.L.M. 874 (1992).

¹⁰⁷Note Verbale Dated 5 July 1991 from the Charge D'affaires of the Permanent Mission to Jordan to the United Nations Secretary General, 46th Sess., U.N. Doc. A/46/141 (1991), at Annex (Explanatory Memorandum), para. 2.

¹⁰⁸*Id.* at Annex, para. 3.

¹⁰⁹There was some discussion over which committee to refer the matter to. Other than the Sixth, likely candidates included the First (Political and Security), which generally is responsible for disarmament issues, and the Second (Economic and Financial), which has cognizance over matters related to the environment. The Sixth Committee was selected in part because of the legal issues raised by Jordan's suggestion that a new convention might be required. Virginia Morris, *Protection of the Environment in Wartime: The United Nations General Assembly Considers the Need for a New Convention*, 27 Int'l L. 775, 776 (1993). On the nature of the committee system, see

than use of the environment as a weapon, argued for expanding consideration to encompass environmental damage generally.¹¹⁰ This suggestion was taken and the title was changed to "Protection of the Environment in Times of Armed Conflict."

During the multiple meetings of the Sixth Committee, there was general consensus that the intentional Iraqi dumping of oil into the Persian Gulf and the setting ablaze of the oil wells constituted violations of international law.¹¹¹ As evidence, several states referred to U.N. Security Council Resolution 678, which held Iraq liable for "any direct loss, damage, including environmental damage, and the depletion of natural resources" caused by the Iraqi invasion.¹¹² In fact, Resolution 678 liability derived not from the environmental law of war, but instead from the *ab initio* unlawfulness of the Iraqi use of force. Restated, 678 was reflective of the *jus ad bellum*, not the *jus in bello*.¹¹³

Unfortunately, there was no consensus on the legal basis for characterizing the environmental destruction as wrongful. The United States, for example, labeled the actions militarily unnecessary, and, therefore, a violation of the Fourth Geneva Convention.¹¹⁴ It also cited them as violations of the *customary* international law rules of proportionality and necessity. Other states referred to Protocol I and ENMOD, while a third group suggested that peacetime

Rules of Procedure of the General Assembly, U.N. Doc. A/520/Rev. 15 (1984), at Rules 98 & 100. For the records of the Sixth Committee proceedings, see Summary Record of the 18th Meeting, U.N. GAOR 6th Comm., 46th Sess., 18th mtg., U.N. Doc. A/C.6/46/SR.18 (1991); Summary Record of the 20th Meeting, U.N. Doc. A/C.6/46/SR.20 (1991); and Summary Record of the 43rd Meeting, U.N. Doc. A/C.6/46/SR.43 (1991).

¹¹⁰S.R. 18, *supra* note 109, at 3.

¹¹¹*Id.* at 8-9.

¹¹²S.C. Res. 678, *supra* note 57.

¹¹³*See infra* sec. III.E.

¹¹⁴*See* discussion of the relevant sections of the Geneva Convention IV *infra* sec. III.D.1.

environmental law carried forward into periods of hostilities and applied in the case of the Gulf War.¹¹⁵

Further disagreement arose in the Sixth Committee over whether new law was needed. The United States vocally opposed a new convention on the grounds that no proposals had been made which adequately balanced the legitimate desire for environmental protection with the need to ensure against an erosion of self-defense rights under Article 51 of the U.N. Charter.¹¹⁶ The opposing view emphasized the extent to which the Gulf War had demonstrated in very real terms the need for further development of the legal regime. Additional issues which surfaced as requiring further consideration included dispute resolution, applicability of peacetime norms during armed conflict, damage assessment processes and the imposition of liability.¹¹⁷

As this debate unfolded, the ICRC was planning its 26th International Conference, at which one topic was to be environmental damage during warfare. When the conference was later canceled, the ICRC decided to convene a meeting of experts in April of 1992 to consider the issue.¹¹⁸ The United Nations took advantage of this opportunity by asking the ICRC to study and report back on current activities in the field, a request the ICRC granted.¹¹⁹

In its 1992 report to the Secretary General, the ICRC, citing the conferences held to date, pointed out that experts had generally concluded that despite a "number of gaps in the rules

¹¹⁵S.R. 18, *supra* note 109, generally.

¹¹⁶*Id.* at 9.

¹¹⁷*Id.* generally. On this and the issue of the basis for unlawfulness of the Iraqi actions, see Morris, *supra* note 109, at 777-779.

¹¹⁸The cancellation was required due to a dispute over attendance of a Palestinian representative. Verwey, Leiden J. Int'l L., *supra* note 12, at 9.

¹¹⁹GA Dec. 46/417 (Dec. 9, 1991).

currently applicable,” the best approach was not a new body of law.¹²⁰ Concurring, the ICRC recommended efforts to convince more states to accede to existing instruments (an obvious reference to Protocol I), enact implementing legislation at the domestic level and observe their international obligations. It also set forth what it believed to be the current law in the area. Specifically cited were Hague IV,¹²¹ the Fourth Geneva Convention,¹²² Protocol I, ENMOD, the Gas Protocol of 1925,¹²³ the Biological Weapons Convention of 1972,¹²⁴ the Conventional Weapons Convention¹²⁵ and the draft Chemical Weapons Convention.¹²⁶ The customary international law of war principles of military necessity and proportionality, as well as the general principle that methods and means of warfare are not unlimited, were likewise referenced as

¹²⁰Protection of the Environment in Times of Armed Conflict: Report of the Secretary General, UN Doc. A/47/328, paras. 39-40 (1992) [hereinafter 1992 ICRC Report].

¹²¹Convention Respecting the Laws and Customs of War on Land, Oct. 18, 1907, 36 Stat. 2277, 1 Bevans 631 [hereinafter Hague IV].

¹²²Geneva Convention IV, *supra* note 8.

¹²³Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare, June 17, 1925, 26 U.S.T. 571, T.I.A.S. No. 8061, 94 L.N.T.S. 65, *reprinted in* 14 I.L.M. 49 (1975) [hereinafter Gas Protocol]. The Gas Protocol entered into force for the United States in 1975.

¹²⁴Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction, Apr. 10, 1972, 26 U.S.T. 583, T.I.A.S. No. 8062, *reprinted in* 11 I.L.M. 310 (1972) [hereinafter Biological Weapons Convention].

¹²⁵Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects, Oct. 10, 1980, 1342 U.N.T.S. 7, *reprinted in* 19 I.L.M. 1523 (1980) [hereinafter Conventional Weapons Convention]. The United States ratified this convention in March of 1995. Interestingly, there has been relatively little attention paid to the convention’s preambular statement that “it is prohibited to employ methods or means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment.” In a reservation, France noted that the provision only applies to countries which have ratified Protocol I Additional, which contains identical language. Protocol III to the Conventional Weapons Convention governs incendiary weapons. Its restrictions “cover attacks on forests or other kinds of plant cover, except when such natural elements are used to cover, conceal or camouflage combatants or other military objects or are themselves military objects.” The United States did not ratify Protocol III. *See discussion infra* sec. III.D.2.

¹²⁶Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction, Jan. 13, 1993, U.N. Doc. CD/CW/WP.400/Rev.1, *reprinted in* 32 I.L.M. 800 (1993) [hereinafter Chemical Weapons Convention]. This convention was transmitted to the Senate in November 1993, but at the time this article was written had not yet been ratified.

applicable, and peacetime environmental law was said to be remain in force during armed conflict, particularly between belligerents and neutrals.¹²⁷

Though the ICRC recommended against further codification, it did highlight four topics which it felt required further clarification. First, it recommended harmonizing the understanding of common terminology found in Protocol I and ENMOD. After all, both use the terms “widespread,” “long-term” and “severe,” but are subject to differing interpretations, a situation which invites confusion in their application. The ICRC also recommended inquiry into the relationship between international environmental law (primarily peacetime law) and the law of armed conflict (labeled “humanitarian law” by the ICRC). Associated with this inquiry was the third topic, determining the obligations belligerents owe non-belligerents relative to environmental damage occurring in the territory of the latter. Finally, the ICRC called for study of how the natural environment *per se* might be better protected.¹²⁸

The report was reviewed by the Sixth Committee. Interestingly, the United States and Jordan submitted a joint memorandum of law to the Chairman of the Sixth Committee for use during consideration of the agenda item.¹²⁹ Though not as comprehensive as the ICRC list of sources, the memorandum set forth an identical set of *core* prescriptions -- Hague IV, Geneva Convention IV and customary law principles such as military necessity, proportionality and

¹²⁷The experts compared international environmental law to human rights law. As in the latter, certain provisions of the former were said to be inapplicable during armed conflict. Nevertheless, the core provisions, analogized to “hard core” provisions in human rights law, remain in effect. 1992 ICRC Report, *supra* note 120, at 12-13. The participants recommended that any new treaty dealing with international environmental law specifically address the issue of applicability in armed conflict. *Id.*

¹²⁸*Id.* at para. 43.

¹²⁹Protection of the Environment in Times of Warfare, Letter of Sep. 28, 1992, from the Permanent Missions of the Hashemite Kingdom of Jordan and of the United States of America to the Chairman of the Sixth Committee, UN Doc. A/C.6/47/3 (1992).

discrimination. Additionally, it mentioned Protocol I and the ENMOD as binding on *parties* to those agreements.

Not long after the Sixth Committee proceedings began, it became clear that the division of opinion over the law's sufficiency, which has already been noted, remained. According to the ICRC account of the committee meetings,

(s)ome States felt that the existing rules were sufficient and that what was needed was ensuring greater compliance with them. However, most of the States represented thought it was also necessary to clarify and interpret the scope and content of some of those rules, and even to develop other aspects of the law relating to the protection of the environment in time of armed conflict. These include the need for better protection of the environment as such, the need for stricter application of the principle of proportionality (and to this end, for a more precise definition of its scope in specific situations), the importance of defining more precisely the threshold of application of the rules, the need for clear decision regarding the applicability in wartime of provisions of international environmental law, and the advisability of setting up a mechanism to sanction breaches thereof.¹³⁰

All suggestions for a "complete overhaul of existing law" were rejected.¹³¹

Based on its review of the initial ICRC report, the Sixth Committee recommended that the ICRC be asked to continue its work in the field and again report its conclusions. By Resolution 47/37, the General Assembly agreed.¹³² 47/37 also called for states to become party to the relevant international agreements, a clear reference to Protocol I and its "rejection" by most of the

¹³⁰ICRC, *Protection of the Environment in Times of Armed Conflict: Report Submitted by the (ICRC) to the Forty-eighth Session of the United Nations General Assembly, June 30, 1993 at 4, reprinted in UN Doc. A/48/269 (1993) [hereinafter 1993 ICRC Report]*. In the debate within the Sixth Committee, many suggestions for improving the legal regime were made. They addressed such issues as the need for harmonization of interpretation and clarification of the norms, the possibility of new law in the field, and potential improvements to the implementation and enforcement regimes, such as fact-finding committees or an international criminal court. For the records of these meetings, see Summary Record of the 8th Meeting, U.N. GAOR 6th Comm., 47th Sess., 8th mtg., U.N. Doc. A/C.6/47/SR. 8 (1992); Summary Record of the 9th Meeting, U.N. Doc. A/C.6/47/SR. 9 (1992); and Summary Record of the 19th Meeting, U.N. Doc. A/C.6/47/SR. 19 (1992).

¹³¹1993 ICRC Report, *supra* note 130, at 4-5.

¹³²Protection of the Environment in Times of Armed Conflict, G.A. Res. 47/37, Nov. 25, 1992, U.N. Doc. A/RES/47/37 (1993).

key players in the international arena. Further, it contained a plea for compliance with the environmental law of armed conflict and urged states to incorporate its provisions into their law of war manuals. Finally, the resolution condemned the environmentally destructive Iraqi actions during the Gulf War as clear violations of “existing provisions of international law.”¹³³

Interestingly, this condemnation, which was unanimously adopted by the General Assembly, has been proffered as “of special interest” in response to the concern expressed by many in the Gulf War’s aftermath that “the international legal structure was not sufficiently developed to deal with problems such as these.”¹³⁴ Despite this assertion, at the time there was much difference of opinion regarding which law was applicable and how to remedy its purported shortcomings. The fact all could agree that the acts were violative of *some* international legal norm is hardly a demonstration that the relevant law is sufficiently developed.

Re-tasked, the ICRC began a second round of consultations. It first considered whether to draft new law or look for ways to improve compliance with existing legal norms. Upon the advice of the experts it had gathered to consider the issue, the ICRC chose the latter course of action. In particular, it decided to develop guidelines for environmental protection during war which could be adopted into instructions individual countries issue to their armed forces.¹³⁵ By its third meeting, the ICRC had completed a draft which was forwarded to the United Nations.¹³⁶ The U.N. General Assembly, in turn, invited member states to review and comment upon the

¹³³*Id.*

¹³⁴John H. McNeill, *Protection of the Environment in Times of Armed Conflict: Environmental Protection in Military Practice*, 1993 Hague Y.B. Int’l L. 75, 77. The Resolution emphasized the illegality of destruction unjustified by military necessity. G.A. Res 47/37, *supra* note 132. On the issues of military necessity and wantonness, see discussion *infra* sec. III.C.1.

¹³⁵Gasser, *supra* note 90, at 640.

¹³⁶1993 ICRC Report, *supra* note 130.

ICRC product. It also asked the ICRC to consider those comments, make appropriate changes to the guidelines, and resubmit them.¹³⁷ These steps were completed by 1994, at which time the General Assembly, without formally approving the guidelines, urged all states to consider incorporating them into their law of armed conflict directives.¹³⁸

Essentially a restatement of the law of war provisions the ICRC cited in its report to the Secretary General two years earlier, the guidelines begin with the assertion that "existing international legal obligations and...State practice" comprise their foundation.¹³⁹ In fact, though, they rely heavily on the Protocol I environmental articles which many countries, in particular the United States, oppose. Nevertheless, given the growing number of states which are Protocol I parties, it would be fair to cite them as the *direction* in which the environmental law of war appears to be heading.¹⁴⁰ As for state practice, the ICRC position would appear to be on firm ground. Whether or not Protocol I is binding on non-signatories, the only country which has arguably violated its Articles 35(3) and 55 prescriptions in a major conflict during the last decade is Iraq, and it suffered near unanimous condemnation for the underlying conduct.

In addition to Protocol I, the guidelines reference a number of other familiar sources of law -- Hague VIII (submarine mines),¹⁴¹ Hague IV, Geneva IV, the Conventional Weapons

¹³⁷ United Nations Decade of International Law, G.A. Res. 48/30, Dec. 9, 1993, U.N. Doc. A/RES/48/30 (1993). The draft resolutions are at U.N. Docs. A/C.6/47/L.2, and A/C.6/47/L.2/Rev. 1 (1992).

¹³⁸ United Nations Decade of International Law, G.A. Res. 49/50, Dec. 9, 1994, U.N. Doc. A/RES/49/50 (1994). The guidelines are reprinted in UN Doc. A/49/323, Annex (1994), and Gasser, *supra* note 90 [hereinafter ICRC Guidelines].

¹³⁹ ICRC Guidelines, *supra*, at para. 1.

¹⁴⁰ As of 30 April 1996, there were 143 parties to the protocol. Among the parties with whom the United States has close military ties are: Australia, Canada, Egypt, Germany, Greece, Korea, and the Netherlands. The Russian Federation is also a party.

¹⁴¹ Hague Convention (VIII) Relative to the Laying of Automatic Submarine Contact Mines, Oct. 18, 1907, 36 Stat. 2332, 2 Am. J. Int'l L. 138 (1908).

Convention, the Convention for the Protection of Cultural Property¹⁴² and ENMOD. They also emphasize the centrality of classic law of war principles such as the rule of proportionality,¹⁴³ note that peacetime environmental law remains applicable during armed conflict to the extent consistent with the law of armed conflict,¹⁴⁴ and include what has become known as a “Martens clause.”¹⁴⁵ Considered a general principle of international law, this latter provision provides that “(i)n cases not covered by rules of international agreements, the environment remains under the protection and authority of principles of international law derived from established custom, from the principles of humanity and from the dictates of public conscience.”¹⁴⁶ In other words, when its criteria are met, offenders are denied the argument that their conduct is not actionable because it falls outside the four corners of applicable international agreements.

Specific prohibitions include those on destroying the environment when not justified by military necessity;¹⁴⁷ attacking forests with incendiary weapons unless the area is being used for cover, concealment, or camouflage, or unless the forests or plant cover are legitimate targets in themselves;¹⁴⁸ and attacking objects which the civilian population depends on for survival (when carried out to deny civilians those objects).¹⁴⁹ Particular types of historic monuments and places

¹⁴²Hague Convention for the Protection of Cultural Property in the Event of Armed Conflict, May 14, 1954, 249 U.N.T.S. 240, *reprinted in* The Laws of Armed Conflict 745 (Dietrich Schindler & Jiri Toman eds., 1988).

¹⁴³“(T)he general principles of international law applicable in armed conflict -- such as the principle of distinction and the principle of proportionality -- provide protection to the environment. In particular, only military objectives may be attacked and no methods or means of warfare which cause extensive damage shall be employed.” ICRC Guidelines, *supra* note 138, para. 4.

¹⁴⁴*Id.* para. 5.

¹⁴⁵The clause is named after the Russian representative who proposed it at the Hague Conference of 1899.

¹⁴⁶ICRC Guidelines, *supra* note 138, para. 7.

¹⁴⁷*Id.* para. 8, *citing* Hague IV, *supra* note 121, art. 23(g); Geneva Convention IV, *supra* note 8, arts. 53 & 147; and Protocol I, *supra* note 8, arts. 35(3) & 55 [*see discussion infra* sec III.D.1.].

¹⁴⁸*Id.* para. 9(a), *citing* Conventional Weapons Convention, *supra* note 125, at Protocol III.

¹⁴⁹*Id.* para. 9(c), *citing* Protocol I, *supra* note 8, at art. 54.

of worship are forbidden targets,¹⁵⁰ as are installations or works containing dangerous forces.¹⁵¹

In a novel environmental provision, the experts recognized the environmental dangers mines posed by prohibiting their indiscriminate laying.¹⁵² As might be expected, the “widespread,” “long-term,” and “severe” formula of Protocol I and ENMOD makes another appearance,¹⁵³ and reprisals against the environment are proscribed.¹⁵⁴ These latter provisions are certain to hinder universal adoption, for both are derived from controversial Protocol I articles. Finally, the responsibility to “prevent and, where necessary, to suppress and to report to competent authorities” breaches of the rules is imposed on military commanders. Using *non-discretionary* language, the guidelines provide that “(i)n serious cases, offenders shall be brought to justice.”¹⁵⁵

It will be instructive to watch the progress of adoption, if only because of the relationship between the guidelines and controversial Protocol I prescriptions.

In fact, increased awareness of warfare’s environmental implications *is* slowly beginning to be reflected where it will have its greatest practical effect, in guides for planners, warfighters and

¹⁵⁰ *Id.* para. 9(d), *citing* Convention for the Protection of Cultural Property, *supra* note 142; Protocol I, *supra* note 8, art. 53.

¹⁵¹ *Id.* para. 9(c), *citing* Protocol I, *supra* note 8, art. 54. Note that the United States is opposed to this provision in Protocol I [*see* discussion *infra* sec. III.C.1].

¹⁵² “The indiscriminate laying of land mines is prohibited. The location of all preplanned minefields must be recorded. Any unrecorded laying of remotely delivered, non-self neutralizing land mines is prohibited. Special rules limit the emplacement and use of naval mines.” ICRC Guidelines, *supra* note 138, para. 10, *citing* Conventional Weapons Convention, *supra* note 125, art. 3; Protocol I, *supra* note 8, arts. 51(4) & 51(5); and Hague VIII, *supra* note 141.

¹⁵³ “Care shall be taken in warfare to protect and preserve the natural environment. It is prohibited to employ methods or means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment and thereby prejudice the health or survival of the population.” ICRC Guidelines, *supra* note 138, para. 11. Note that the ICRC has elected to include the anthropocentrically based prescription found in Article 55 of Protocol I, rather than the more heavily intrinsic value prohibition of Article 35(3). *See* discussion of this distinction *infra* sec. II.D.2.

¹⁵⁴ *Id.* para. 13, *citing* Protocol I, *supra* note 8, art. 55(2).

¹⁵⁵ *Id.* para. 20, *citing* Geneva Convention IV, *supra* note 8, arts. 146 & 147, and Protocol I, *supra* note 8, arts. 86 & 87.

operational lawyers. The German law of war manual is among the most progressive.¹⁵⁶ Not only does this 1992 document provide for basic protections such as military necessity, unnecessary suffering and distinction, but it also includes prohibitions which track those found in Protocol I and ENMOD. Specifically, Article 401 provides that it is “particularly prohibited to employ means or methods of warfare which are intended or of a nature...to cause widespread, long-term and severe damage to the natural environment.”¹⁵⁷ The manual contains a similar provision for naval warfare.¹⁵⁸ What is most noteworthy about the German guidance is that it clarifies the ENMOD and Protocol I terminology around which most objections center. By Article 403, “‘widespread, long-term and severe’ damage to the natural environment is a major interference with human life or natural resources which considerably exceeds the battlefield damage to be regularly expected in war. Damage to the natural environment by means of warfare and severe manipulation of the environment as a weapon are likewise prohibited.”¹⁵⁹ The extent to which this attempt to square the terminological circle of these two agreements will prove successful remains to be seen.

Another example of a law of war guide which addresses the environment is the San Remo Manual. Drafted for the International Institute of Humanitarian Law by a group of distinguished experts between 1988 and 1994 as a “restatement” of the international law of armed conflict at

¹⁵⁶Federal Ministry of Defense (Germany), *Humanitarian Law in Armed Conflicts: Manual* (1992) [hereinafter *German Manual*]. Damage to the environment by means of warfare and severe manipulation of the environment as a weapon are likewise prohibited. In the case of both articles, cites to Articles 35 and 55 of Protocol I and to ENMOD are provided.

¹⁵⁷ *Id.* art. 401.

¹⁵⁸ The Manual provides, “(i)t is prohibited to employ methods or means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment.” *Id.* art. 1020

¹⁵⁹ *Id.* art. 403.

sea, this influential guide takes a different approach than its German counterpart.¹⁶⁰ Whereas the German Manual adopts the phraseology of Protocol I and ENMOD, the San Remo Manual employs the “due regard” standard of care found in the Law of the Sea Convention.¹⁶¹ The resulting paragraph 44 provides that, “methods and means of warfare should be employed with due regard for the natural environment taking into account the relevant rules of international law. Damage to or destruction of the natural environment not justified by military necessity and carried out wantonly is prohibited.”¹⁶² Although this provision is less stringent than those found in Protocol I and ENMOD, it may be more appropriate in the naval context because “due regard” is a familiar concept in maritime law and practice. Additionally, Protocol I was never intended to encompass naval warfare.¹⁶³

None of the primary U.S. law of war manuals highlight environmental concerns to any significant degree. Current Army and Air Force versions are simply too dated to have focused on the issue.¹⁶⁴ While the Navy’s was also silent,¹⁶⁵ its newly published manual does mention the

¹⁶⁰International Institute on Humanitarian Law, San Remo Manual on International Law Applicable to Armed Conflicts at Sea (Louise Doswald-Beck ed., 1995) [hereinafter San Remo]. The group assembled to draft the manual included Professor Salah El-Din Amer, Ms. Louise Doswald-Beck, Vice Admiral (ret.) James Doyle, Commander William J. Fenrick, Mr. Christopher Greenwood, Professor Horace Robertson, Mr. Gert Jan Van Hegelsom and Dr. Wolff Heintschel von Heinegg.

¹⁶¹ United Nations Convention on the Law of the Sea, Dec. 10, 1982, U.N. Doc. A/CONF 62/122, *reprinted* 21 I.L.M. 126 (1982) [hereinafter LOS]. For instance, Art. 58(3) provides that “(i)n exercising their rights and performing their duties under this Convention in the exclusive economic zone, States shall have due regard to the rights and duties of the coastal State....”

¹⁶² San Remo, *supra* note 160, para. 44.

¹⁶³On the applicability of Protocol I to naval warfare, see *infra* sec. III.D.1.c. At the meeting there was significant debate over whether to use a “due regard” or “respect for” standard. According to the Rapporteur, some of the participants wanted to use the latter to maximize protection of the environment. However, the “due regard” standard was eventually agreed upon because it was already in usage in the LOS Convention and because it “more appropriately expressed the balance that must exist between the right of the States involved in naval conflict at sea to use lawful methods and means of warfare on the one hand, and the duty of such States to protect the marine environment on the other.” San Remo Manual, *supra* note 160, para. 44.6-44-10.

¹⁶⁴Department of the Air Force, International Law--The Conduct of Armed Conflict and Air Operations (AFP 110-31) (1976); Department of the Army, The Law of Land Warfare (FM 27-10) (1956).

topic.¹⁶⁶ Since it represents the most current articulation of U.S. policy on the subject, the manual's sole environmental provision merits quotation in its entirety:

It is not unlawful to cause collateral damage to the natural environment during an attack upon a legitimate military objective. However, the commander has an affirmative obligation to avoid unnecessary damage to the environment to the extent that it is practicable to do so consistent with mission accomplishment. To that end, and as far as military requirements permit, methods or means of warfare should be employed with due regard to the protection and preservation of the natural environment. Destruction of the natural environment not necessitated by mission accomplishment and carried out wantonly is prohibited. Therefore, a commander should consider the environmental damage which will result from an attack on a legitimate military objective as one of the factors during targeting analysis.¹⁶⁷

It will be particularly interesting to see how the new U.S. multi-service law of war manual, which the Army has the lead on, handles environmental matters. If the most recent edition of the Army's excellent Operational Law Handbook is any indication, the manual will evidence a growing awareness of, and commitment to, environmental protection during warfare.¹⁶⁸ The handbook devotes an entire chapter to the subject of the environmental law of war, citing as its sources those which were referenced in the ICRC Report and the Jordanian-U.S. memorandum. However, what is noteworthy about the handbook is that in discussing military necessity, as

¹⁶⁵Department of the Navy, The Commander's Handbook on the Law of Naval Operations (NWP 9 - Rev. A) (1989).

¹⁶⁶Note that both the Marine Corps and Coast Guard have agreed to its use in a multi-service format.

¹⁶⁷Department of the Navy, Commander's Handbook on the Law of Naval Operations (NWP 1-14M), para. 8.13 (1996).

¹⁶⁸Center for Law and Military Operations and International Law Division, The Judge Advocate General's School, Operational Law Handbook (1995) [hereinafter Operational Law Handbook]. The Handbook provides that,

(p)rotecting the environment has become steadily more important during the past several decades. The international community is increasingly vigilant in its oversight of the environmental consequences of military operations....Failure to comply with environmental law can jeopardize current and future operations, generate domestic and international criticism, produce costly litigation, and even result in personal liability of both the leader and the individual soldier.

Id. at 5-1.

exemplified in Article 23(g) of Hague IV, it directs judge advocates to “pay particular attention to (1) the geographical extent (how widespread the damage will be), (2) the longevity, and the (3) severity of the damage to the target area’s environment.”¹⁶⁹ This is particularly significant because these three factors mirror those found in the Protocol I provisions to which the U.S. objects. The handbook also notes that while the United States is not a party to the protocol, U.S. forces need to be sensitive to the implications of combined operations with the military forces of states which are. This is superb advice of very practical warfighting import.

Finally, mention should be made of a NATO initiative in the environmental field which has borne little fruit thus far. In January of 1994 Norwegian, German and Canadian representatives recommended that NATO’s Committee on the Challenges of Modern Society conduct a pilot study on environmental protection. Though the proposal was favorably received by most delegations, two expressed a concern that the study might have negative consequences for military effectiveness. At present, the proposal has been placed on hold pending further assessment of its merits.¹⁷⁰ Whether it resurfaces will be an excellent bell weather for attitudinal shifts regarding the place of environmental concerns in combat.

Do the various steps forward described above portend an emergent military sensitivity to the environmental law of war? It would appear so, a contention highlighted by Office of the Secretary of Defense (OSD) sponsorship of “The Symposium on the Protection of the Environment During Armed Conflict and Operations Other Than War” at the Naval War College

¹⁶⁹*Id.* at 5-4.

¹⁷⁰ This initiative is described in Dieter Fleck, Protection of the Environment During Armed Conflict and Other Military Operations: The Way Ahead, NWC Symposium Paper, *supra* note 12, at 7-8.

in September 1995.¹⁷¹ Despite heightened interest in such protection, the prevailing view -- that no effort to fashion new law, or to codify existing law, is needed -- remains firmly entrenched. It was certainly the general consensus of the scholars, warfighters and policy makers who gathered in Newport.¹⁷² That the dominant cognitive perspective remains overwhelmingly anthropocentric is also clear. Perhaps the comments of the ICRC's Hans-Peter Gasser reflect the attitude of most. Speaking at the 1991 London Conference, albeit in his personal capacity, he noted that,

...the ICRC does not look so much at the environment as such but more at the environment in the context of and around human beings. As you know the Geneva Conventions are geared essentially to the protection and safeguarding of human beings in times of armed conflict....(The environmental provisions of Geneva law) protect the environment for human beings -- when both civilians and combatants are affected.¹⁷³

This perspective could apply equally to the law beyond the Geneva Conventions (and Protocol I), as well as international attitudes other than those of the ICRC. With the historical record now set forth, it is appropriate to turn to an analysis of that law, and the effect of the various perspectives on it.

¹⁷¹ The papers presented at the conference have been referenced liberally throughout this article, for they represent the most current thought on the subject. Each of the papers, as well as the conference proceedings, will be published as *Protection of the Environment During Armed Conflict & Other Military Operations* (Naval War College International Law Studies, vol. 69) (Richard Grunawalt et al., eds. 199_) [forthcoming].

¹⁷² However, it was not the unanimous consensus. Some participants criticized the lack of practicality of the existing law, others called for new law, and still others noted that the time was simply not right for a codification effort. *See id.*

¹⁷³ Hans Peter Gasser, Comments During Round Table Session I, *in* Plant, *supra* note 86, at 111.

III. WHERE ARE WE?

A. Peacetime Prescriptions

Since the Gulf War, there has been widespread recognition that the role of peacetime environmental prescriptions during armed conflict merits further study.¹⁷⁴ Part of the uncertainty derives from the context within which this body of law was intended to operate. As one commentator has perceptively noted, it emerged primarily in response to major environmental accidents such as the Torrey Canyon disaster and Chernobyl.¹⁷⁵ Never was it intended to govern intentional infliction of damage to another's territory. As a matter of fact, in several cases the issue is explicitly dealt with through treaty provisions *excluding* applicability during armed conflict.¹⁷⁶ Yet, to the extent that international actors are liable for negligent actions (or even non-negligent in cases of strict liability) which damage the environment, should they not also be held liable when they *intentionally* set out to realize the forbidden end? From a moral perspective, the response may well be that they should; legally, things look much hazier.¹⁷⁷

¹⁷⁴ For instance, the matter was addressed in both the ICRC and Munich Conference reports. Their specific conclusions are nearly interchangeable. The ICRC experts opined that environmental law remained largely applicable during hostilities (thus acknowledging that some of it would not be), and that core treaties relevant to the environment needed to be analyzed to assess such applicability. 1992 ICRC Report, *supra* note 120, at 12-13. The Munich Conference went slightly further by noting that environmental law remained in force as between belligerents and non-belligerents, but that the rules concerning its effect vis-à-vis opposing belligerents needed to be clarified. Munich Report, *supra* note 92, at para. 6. The consensus view that these reports represent is that while some peacetime environmental law may certainly remain in effect during hostilities, no ready made catalogue of applicable law exists, nor are the rules for applicability well-defined.

¹⁷⁵ Anthony Leibler, *Deliberate Wartime Environmental Damage: New Challenges for International Law*, 23 Cal. W. Int'l L.J. 67, 69-70 (1992). However, Mr. Leibler goes on to note that "to the extent that these laws apply to the negligent or careless pollution, it is logical to assume that they must certainly apply to deliberate pollution."

¹⁷⁶ See, e.g., Convention for the Prevention of Pollution at Sea by Oil, May 12, 1954, art. 19, 12 U.S.T. 2989, 327 U.N.T.S. 3. "In case of war or other hostilities...(a party may)...suspend the operation of the whole or any part of the present convention."

¹⁷⁷ In his excellent article, Anthony Leibler notes that "to the extent that these laws apply to the negligent or careless pollution, it is logical to assume that they must certainly apply to deliberate pollution." Leibler, *supra* note 175, at 70. While it may in fact be *logical*, such a conclusion does not hold as a matter of international law. As will be seen *infra*, the existence of a state of armed conflict has much play on the issue.

The uncertainty is of consequence, for the bulk of international environmental law is found in sources other than the law of armed conflict. Selected elements of that law will be surveyed in the following sections. However, much more important than the issue of *what* law applies is that of *when* it applies. What are the “rules” for applying peacetime norms during armed conflict? Without understanding them, any consideration of specific scenarios which might involve peacetime norms will prove futile because most environmental agreements fail to address the issue head on. Therefore, the inquiry into peacetime prescriptions must begin with the issue of applicability.

1. Applicability

In the classic understanding, treaties did not survive the initiation of hostilities. War was a state of affairs that existed beyond the realm of international law and relations; indeed, it represented the breakdown of those entities. However, the more modern view is that war is a continuation of interstate relations and, thus, susceptible to legal bounding. This was the position expressed by Justice Benjamin Cardozo in the landmark case of *Techt v. Hughes*.¹⁷⁸ According to Justice Cardozo, “international law today does not preserve treaties or annul them, regardless of the effects produced. It deals with such problems pragmatically, preserving or annulling as the necessities of war exact. It establishes standards, but it does not fetter itself with rules.”¹⁷⁹

Within this contemporary approach, three camps may be discerned.¹⁸⁰ The older school suggests that whereas certain relations animated by legal content might survive the outbreak of

¹⁷⁸ *Techt v. Hughes*, 229 N.Y. 222, 241, 128 N.E. 185, (N.Y. Ct. App. 1920), cert. denied, 254 U.S. 643, 41 S.Ct. 14, 65 L.Ed. 454.

¹⁷⁹ 229 N.Y. at 241.

¹⁸⁰ Much of this analysis builds on the excellent discussion by Jost Delbrück in the *Encyclopedia of International Law*. Jost Delbrück, *Effect of War on Treaties*, 4 *Encyclopedia of Public International Law* 310 (1982).

hostilities, treaties do not; the mere existence of a treaty relationship is inconsistent with a state of armed conflict.¹⁸¹ Its advocates would also point to the fact that no peacetime environmental convention specifically provides for applicability during hostilities as further evidence that they are not intended to be carried forward.¹⁸² On the other side are those who maintain that treaties do survive, except to the extent they are by specific nature inconsistent with hostilities. Examples of inconsistent agreements between opposing belligerents include status of forces agreements, alliance arrangements or military aid treaties. A third approach takes the middle ground. Labeled the "theory of differentiation," it is contextual in nature and reflects an effort to balance the stability that international agreements offer with a realization that armed conflict may be at odds with fulfillment of treaty obligations and rights. Importantly, it acknowledges that treaties may concern others than merely the belligerents. Thus, when determining if an agreement survives it is necessary to ask whether continued vitality is consistent with the context -- writ large -- in which it will operate.

The Vienna Convention on the Law of Treaties does little to help resolve the matter. In Article 73, it simply states that "(t)he provisions of the present Convention shall not prejudice any question that may arise in regard to a treaty...from the outbreak of hostilities."¹⁸³ In the absence

¹⁸¹ For example, one prominent scholar has noted that "(a)s a rule, bilateral treaties are terminated or suspended by the outbreak of a war unless they were concluded with the war in mind. The effects of multilateral treaties are also suspended between the adversaries unless they were concluded specifically with a view to the state of war." He goes on to acknowledge, however, that "(a) modern opinion...favors the non-suspension of certain types of obligations even between belligerents. It would appear that some basic rules relating to the environment might be counted among the latter obligations." Michael Bothe, *The Protection of the Environment in Times of Armed Conflict: Legal Rules, Uncertainty, Deficiencies and Possible Developments*, 34 *Germ. Y.B. Int'l L.* 54, 59 (1991).

¹⁸² Verwey, NWC Symposium Paper, *supra* note 12, at 11.

¹⁸³ Vienna Convention on the Law of Treaties, May 23, 1969, art. 73, 1155 U.N.T.S. 331, 8 I.L.M. 679 (1969) [hereinafter Vienna Convention]. The Vienna Convention came into force in 1980, but as of the date of this article has not been ratified by the United States. Nevertheless, most of its provisions are declaratory of customary international law.

of a definitive statement of law, and in the face of disagreement over the effect of war on treaties, one must turn to logic and context to select from among the three approaches. It is the third, the theory of differentiation, which best fosters international interests in global order. To argue *sans plus* that treaties become inoperative upon the start of hostilities is to suggest that war is really all that matters once it breaks out. However, many treaties are the expression of mutual interests wholly unrelated to the causes or effects of conflict. The first approach would, therefore, forfeit the mutual benefits that they might provide both parties.¹⁸⁴ On the other hand, the second approach's claim of near universal continued validity is simply unrealistic. States become involved in armed conflict for many different reasons. Some are the product of rational decision making, some are not. Yet *all* wars are emotion laden. Even aspects of *ante bellum* relations unrelated to the conflict are bound to be affected, a reality the law should account for. The aim should be to preserve treaty regimes which *can* survive; to artificially perpetuate those which are destined to splinter will only dilute the effect of treaties which might not.

Best fostering this aim is the third conceptual approach. It suggests certain conclusions about continued vitality which derive from the nature of the treaty at hand and the type of conflict underway. On one hand, there are those agreements intended for armed conflict. The Geneva Conventions are illustrative of this group. Obviously, all such treaties survive; indeed, they may not even become operative until hostilities occur. Also surviving are treaties which expressly provide for continuance during war.¹⁸⁵ At the other end of the spectrum lie those which either

¹⁸⁴For example, mutual safeguarding of straddling stock of fish pursuant to Article 63 of the Law of the Sea Convention benefits both sides by preserving a mutually important natural resource. LOS Convention, *supra* note 161, art. 63.

¹⁸⁵An example of a treaty expressly providing for continuation in the event of war is the General Act of the Berlin Conference Respecting the Congo, Feb. 26, 1885, 165 Consol. T.S. 485. The treaty provided for freedom of navigation on the Congo and Niger rivers. The Convention Relating to the Non-fortification and Neutralization of

become inoperative by their own terms once armed conflict breaks out¹⁸⁶ or are so obviously inconsistent with it that they are *a priori* deemed to terminate when it does. Military aid agreements are a good example.

The issue becomes much more difficult between the two extremes. However, given the goals underlying the theory of differentiation, it is possible to pose a series of queries which can help identify where along the continuum the treaty in question is likely to fall. Consider the following indicators of survivability. In doing so, bear in mind that they apply contextually; it would be foolhardy to assess survivability divorced from the actual situation in which the applicability issue arose.

1) Does the treaty regulate private or public interests? Treaties governing purely private interests are more likely to survive, for citizens may continue to reap their benefits even after the outbreak of hostilities without damaging the state's interests. Since environmental treaty law performs both functions, a case by case analysis is called for.

2) Is the treaty multilateral or bilateral? Treaties which are bilateral are much more likely to be suspended or terminated. By contrast, multilateral treaties would generally remain operative between belligerent and non-belligerent signatories. While logic might suggest the opposite conclusion would hold as between opposing belligerents, if the obligation or right involved has ramifications (collateral damage, if you will) which extend beyond the belligerents, then it is less likely to be suspended or terminated. This will often be the case with treaties which create

the Aaland Islands, Oct. 20, 1921, 9 L.N.T.S. 211, illustrates an agreement expressly intended to continue in effect during hostilities.

¹⁸⁶ See, e.g., the Convention for the Protection of Pollution of the Sea by Oil, May 12, 1954, art. 19, 12 U.S.T. 2989, 327 U.N.T.S. 3, which permits parties to suspend the operation of the treaty either in whole or in part in the event of war or other hostilities.

international regimes for a shared good.¹⁸⁷ Given the interconnectedness of the global environment, survivability of environmental obligations and rights is especially likely.¹⁸⁸

3) Who is a bilateral treaty between? If it is between belligerents then it will almost surely be suspended or terminated. Conversely, bilateral treaties between a belligerent and non-belligerent will usually remain in force. There are certain exceptions to this generalization, the most common being the legal principle of “fundamental changed circumstances” -- *rebus sic stantibus*. This customary principle, codified in Article 62(1) of the Vienna Convention on the Law of Treaties, holds that an unforeseen fundamental change of circumstances may justify termination or withdrawal when the anticipated circumstances constituted an “essential basis of the consent” of the parties at the time of agreement *and* the effect of enforcing the treaty in the new circumstances would be to “radically transform” the unperformed obligations of one of them.¹⁸⁹ There can be little debate about whether the outbreak of armed conflict constitutes a fundamental changed circumstance. In the environmental arena, though, a state of peace was probably not an essential basis of agreement, unless compliance with the environmental restrictions would hinder effective combat operations. If so, it would fall into the category of

¹⁸⁷ An excellent example of a treaty providing a regime for the common good is the Convention on International Civil Aviation (Chicago Convention), Dec. 7, 1944, 61 Stat. 1180, 15 U.N.T.S. 295. This convention sets forth “the rules of the air” for non-governmental aircraft.

¹⁸⁸ Consider the case of the Kuwait Regional Convention for Cooperation on the Protection of the Marine Environment from Pollution, Apr. 24, 1978, 17 I.L.M. 511 (1978). This treaty, to which Bahrain, Iran, Iraq, Kuwait, Oman, Qatar, Saudi Arabia and the UAE are parties, provides for the establishment of the Regional Organization for the Protection of the Marine Environment (ROPME), headquartered in Kuwait. ROPME continued to operate during the Gulf War, with the participation of both Kuwait and Iraq, even though its staff elements did leave Kuwait during the Iraqi occupation. Further, the organization was instrumental in the post-hostilities cleanup effort.

¹⁸⁹ Vienna Convention, *supra* note 183, art. 62(1). It is a contextual standard. Consider the Convention on International Trade in Endangered Species of Wild Fauna and Flora, July 1, 1975, 27 U.S.T. 1087, 16 I.L.M. 1085 (1973), an agreement which appears to have little relationship to armed conflict. However, what of the case of an extremely poor (failing) state engaged in an armed struggle for survival? If endangered species were one of the state’s few sources of funds, would that state be required to comply with the denunciation provisions set forth in the treaty, or would the conflict represent changed circumstances which radically transform the state’s obligations?

radically transformed unperformed obligations. This analysis is equally applicable to multilateral treaties. Note that an "aggressor" may not invoke fundamental changed circumstances to excuse itself from treaty obligations because the change may not result from breach of international obligations owed to other treaty parties.¹⁹⁰ Thus, if the invoking party is in violation of Charter Article 2(4), it may not rely on the Vienna Convention Article 62 escape clause.

4) Are treaty obligations/rights executed or executory? The finality of a treaty is a powerful indication that it should remain in effect.¹⁹¹ Only in extraordinary circumstances would it be disturbed, and such cases would generally involve issues of fraud, coercion and the like, not the existence of armed conflict.¹⁹² Most environmental treaties, by contrast, are executory because they impose continuing obligations.

5) What type of conflict is involved? Current legal perspectives regarding treaty survivability were conceived of as operating in the context of robust warfare, i.e., hostilities of relatively significant intensity and extended duration. Further, they were responsive to a classic aggression - self-defense paradigm. Today, however, the type of conflict which the United States and other major powers are most likely to find themselves involved in is a low intensity, limited duration, MOOTW operation motivated by other than defensive considerations.

Should MOOTW -- peacekeeping, peace enforcement, peacemaking, humanitarian intervention, humanitarian relief, etc. -- be deemed to have the same effect on treaties as more traditional forms of combat? They should not. Warfare in the familiar sense is a breakdown in

¹⁹⁰ Vienna Convention, *supra* note 183, art. 62(2).

¹⁹¹ For instance, in the Treaty of Peace Between the United States and Great Britain the United States is acknowledged to be a free state. The provision binds all the King's successors. Treaty of Peace, Sept. 3, 1783, U.S.-Gr. Brit., art. 2, 8 Stat. 80, T.S. 104.

¹⁹² On the grounds for invalidity of treaties, see the Vienna Convention, *supra* note 183, arts. 46-53.

relations, followed by an aggressive act. In response, the “victim” state acts in self-defense. Normal relations have been supplanted by the desire to harm an opponent. Though the intent may not be malicious (as in, e.g., an attempt to force an enemy to come to his senses regarding the costs of aggression), harm nevertheless remains the objective. In MOOTW on the other hand, the goal is usually to avoid having to harm an opponent, assuming one can even be identified. That being so, there should be a presumption in favor of continued legal relations between all parties. When this presumption proves unreasonable or impractical in specific circumstances, the fall back position would logically be a second presumption favoring suspension over termination of the treaty. The avoidance of environmental damage fits well within this relatively benign perspective.

To summarize, the approach which best comports with the reality of armed conflict while fostering world order is one in which a presumption of survivability attaches to peacetime environmental treaties absent either *de facto* incompatibility with a state of conflict or express treaty provisions providing for termination. That said, the issue is best analyzed contextually on a case by case basis. Particularly important is sensitivity to the possibility that urging the validity of treaties which are inconsistent for practical purposes with the existence of belligerent relations may be counterproductive to survivable treaty regimes. Finally, in assessing whether war has rendered treaty obligations void, voidable, suspended or suspendable, it is essential to ask who the effect applies to, for a key distinguisher in assessing survivability is whether the treaty is between belligerents or a belligerent and a non-belligerent.

2. Substantive Norms

Those hoping to find comprehensive peacetime limits on environmental damage in either customary law or the decisions of international adjudicative bodies are destined for

disappointment. Instead, the fairly prolific output of various international bodies, particularly the United Nations, has been primarily hortatory and aspirational in nature. As will become clear, states surrender sovereign prerogatives over the use of, and activities within, their territory with great reluctance. Thus, those international instruments which have been agreed upon tend to be either non-binding or narrowly crafted.

The beginning of the modern international environmental effort can be traced to the Stockholm Conference of 1972. Attended by representatives of over 100 nations, the United Nations sponsored gathering produced two hortatory documents, a Declaration on the Human Environment and an Action Plan.¹⁹³ The declaration sets forth 26 guiding principles designed to underlie any effort to craft international environmental prescriptions.¹⁹⁴ It begins by asserting that there is a "fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and well-being."¹⁹⁵ This right contains within it the corollary duty to "protect and preserve the environment for present and future generations."¹⁹⁶ Other principles address such matters as the relationship between underdevelopment and the environment and liability/compensation.¹⁹⁷

Principle 21 serves as the declaration's capstone. Reiterating the most basic premise of international environmental law, it provides that: "States have, in accordance with the (U.N.

¹⁹³In its Action Plan, the Conference adopted 109 recommendations which address such matters as management of the global environment and environmental assessment. United Nations Conference on the Human Environment, Action Plan for the Human Environment, U.N. Doc. A/CONF.48/14, *reprinted in* 11 I.L.M. 1421 (1972).

¹⁹⁴ United Nations Conference on the Human Environment, Stockholm Declaration on the Human Environment, June. 16, 1972, U.N. Doc. A/Conf.48/14 and Corr. 1 (1972), *reprinted in* 11 I.L.M. 1416 (1972) [hereinafter Stockholm Declaration].

¹⁹⁵ *Id.* princ. 1.

¹⁹⁶ *Id.*

¹⁹⁷ *Id.* princs. 9 & 22.

Charter) and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.”¹⁹⁸ The inherent tension between sovereignty and international environmental law is thereby recognized, with an attempt made to balance the two. The final clause of the principle also suggests extension of state responsibility to acts which cause environmental damage in the global commons, e.g., the high seas.¹⁹⁹ Finally, though the declaration does not address war *per se*,²⁰⁰ Article 26 emphasizes that “(m)an and his environment must be spared the effects of nuclear weapons and all other means of mass destruction.”²⁰¹ Thus, at this early point, consideration of the effect of warfare on the environment centered less on the *fact* of an impact than it did on the *quantum* of damage which could be caused, a very anthropocentric approach.

Although it did not generate new law, the Stockholm Declaration was certainly indicative of the direction in which international attitudes were headed by 1972. The environment was now acknowledged as a separate entity, but legal norms to afford it protection continued to employ balancing tests. The next major environmental effort came ten years later when the World

¹⁹⁸ *Id.* princ. 21.

¹⁹⁹ One practical effect of the conference was to help speed establishment of the United Nations Environment Program. Created in 1973, UNEP is responsible for coordinating the various U.N. activities involving the Environment. It is also charged with pursuing agreement on international environmental treaties such as the Vienna Convention for the Protection of the Ozone Layer, Mar. 22, 1985, T.I.A.S. 11097, 26 I.L.M. 1529 (1985).

²⁰⁰ Stephanie Simonds makes the argument that Principle 21 does not apply during warfare. Noting that this was the position of certain delegations, including the United States, she refers to the Rio Declaration as evidence because it derived from the Stockholm Declaration. In particular, she points to the fact that the Rio Declaration’s liability provisions (liability being based on a violation of Principle 21 and its progeny) are distinct from the Principle 24 mention of warfare. Stephanie N. Simonds, *Conventional Warfare and Environmental Protection: A Proposal for International Legal Reform*, 29 Stan. J. Int’l L. 165, 192 (1992).

²⁰¹ Stockholm Declaration, *supra* note 194, princ. 26.

Conservation Union issued the World Charter for Nature, a document promptly adopted by the United Nations General Assembly, albeit with minor modifications.²⁰² In it, those principles of conservation intended to serve as “the common standard by which all human conduct affecting nature is to be guided and judged” are set forth.²⁰³ Of course, as a General Assembly resolution it is, like the Stockholm Declaration, hortatory and aspirational. Nevertheless, it reflects another broad articulation of standards which influence assessments of environmentally destructive conduct.

With regard to the possibility of extending peacetime norms to armed conflict, the charter’s key component are found in five general principles. They urge against disruption of the “essential processes” of nature, assert the need to safeguard habitats to prevent extinction, encourage protective regimes for unique areas, and argue for an ecosystem approach to maintenance of environmental well-being.²⁰⁴ Most importantly, in General Principle Five the charter states that “(n)ature shall be secured against degradation caused by warfare or other hostile activities.”²⁰⁵ Building on this aspiration in the section on implementation is Principle 20, a provision which could apply equally to times of peace and war.

Military activity damaging to nature shall be avoided, and in particular:

(a) Further development, testing and use of nuclear, biological, chemical or environmental modification methods of warfare shall be prohibited; and

²⁰²World Charter for Nature, Oct. 28, 1982, U.N.G.A. Res. 37/7, U.N. GAOR Supp. (no. 51) 21, U.N. Doc. A/37/L.4 & Add. 1 (1982). In the General Assembly voting, 17 nations abstained, while one, the United States, voted against the resolution. The U.S. vote was not based on the provisions concerning warfare. 1981 U.N.Y.B. 1026.

²⁰³ *Id.* pmbl.

²⁰⁴ *Id.* princs. 1-4.

²⁰⁵ *Id.* princ. 5.

(b) Protected areas, the Antarctic region and outer space shall be free of military activity.²⁰⁶

Coming on the heels of Protocol I and ENMOD, the World Charter reflected the broadest statement on war and the environment to date by an intergovernmental organization.

As might be expected, the charter was a predominately anthropocentric product. This is particularly apparent in the seven principles related to “responsibilities” of parties. For instance, the section begins with the statement that “(i)n the decision-making process it shall be recognized that man’s needs can be met only by ensuring the proper functioning of the natural systems.”²⁰⁷ Similarly, in assessing whether to proceed with activities that pose a significant risk to nature, proponents are required to “demonstrate that expected benefits outweigh potential damage to nature.”²⁰⁸ While not purely anthropocentric (because the risk calculation need not be measured in terms of the contribution nature’s damaged aspect makes to *man*), the mere fact that balancing occurs suggests a homocentric perspective.

A decade after adoption of the World Charter, the United Nations sponsored the “Earth Summit” in Rio de Janeiro to commemorate the twentieth anniversary of the Stockholm Conference. At the summit, five documents were produced: the Climate Change Convention, the Declaration of Principles on Forest Conservation, the Convention on Biological Diversity, Agenda 21 and the Rio Declaration. It is the last of these that is of relevance to this study.

The Rio Declaration is, to some extent, an effort to update the Stockholm Declaration.²⁰⁹ Of particular importance is Principle Two, which revises Stockholm Principle 21 by placing

²⁰⁶*Id.* princ. 20.

²⁰⁷*Id.* princ. 6.

²⁰⁸*Id.* princ. 11(b).

²⁰⁹Rio Declaration, *supra* note 106.

greater emphasis on the sovereign prerogative to develop one's own resources.²¹⁰ This was done to satisfy the developing states' desire to ensure environmental "restrictions" (the declaration is technically non-binding) did not hinder their growth. Unfortunately, the concession actually decreases the extent of environmental protection, for development will assume greater weight in the balancing process. Additionally, the emphasis on developmental concerns highlights the declaration's relatively anthropocentric nature. Indeed, it exemplifies the fact that an evolution from anthropocentrism towards an intrinsic value approach is most likely to come in those countries that have already passed through the developing state phase. After all, it is only logical that basic human needs must be satisfied before an other than anthropocentric cognitive prism can be internalized.

Despite this rather restrictive view, the Rio Declaration, unlike its predecessors, directly references the effect of warfare on the environment. In Principle 24, it characterizes warfare as "inherently destructive of sustainable development," and notes that states must, therefore, "respect international law providing protection for the environment in times of armed conflict and cooperate in its further development."²¹¹ It is not surprising that the declaration included this principle, coming as it did on the heels of the Gulf War. Though an exhortation to comply with existing law is purely hortatory, and one to cooperate merely aspirational, the Rio Declaration is

²¹⁰ "States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental *and developmental* policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction" (emphasis added). *Id.* princ. 2. The next two principles cement the theme in place. "The right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations." *Id.* princ. 3. "In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it." *Id.* princ. 4.

²¹¹ *Id.* princ. 24.

additional evidence that environmental damage during combat remains in the international spotlight.

Finally, the Rio Declaration handles the issue of state responsibility for environmental damage by urging further development in that area of the law. At the national level it encourages states to address liability and compensation issues legislatively. Recognizing, however, that the problem is really one of international scope requiring an international remedy, it also exhorts them to “cooperate in an expeditious and more determined manner to develop further international law regarding liability and compensation for adverse effects of environmental damage caused by their activities within their jurisdiction or control to areas beyond their jurisdiction.”²¹²

A last document of importance when considering non-binding instruments is the International Law Commission’s (ILC) Draft Articles on State Responsibility.²¹³ In Article 19(3)(d), the ILC recommends characterizing “a serious breach of an international obligation of essential importance for the safeguarding and preservation of the human environment, such as those prohibiting massive pollution of the atmosphere or of the seas,” as an international crime.²¹⁴ To date, the article remains purely aspirational. Nevertheless, it is yet another indication that the environment *per se* is increasingly deemed deserving of protection in and of its own right.²¹⁵

²¹²*Id.* princ. 13.

²¹³International Law Commission Draft Articles on State Responsibility, 1980 Y.B. Int’l L. Comm’n, vol. 2 (1980), at 30. In 1947 the U.N. General Assembly established the International Law Commission for the purpose of conducting international law research and drafting conventions. Its membership includes internationally recognized scholars and practitioners of international law.

²¹⁴*Id.* art. 19(3)(d).

²¹⁵ Note that this article is referring to *state* crimes, not individual crimes under international law. Professor Greenwood has placed this in appropriate perspective.

Whether the Commission’s attempt to create a concept of State crimes separate from other breaches by states of their international obligations will prove acceptable and whether it will actually make any difference to the substantive law (as opposed to such issues as the standing to bring a claim) is debatable. What matters for present purposes is the clear recognition that a State incurs responsibility under international law for the breach of its environmental obligations.

In terms of *binding* international environmental law, the most basic and widely accepted traditional principle is expressed in the maxim, *sic utere tuo ut alienum non laedas* -- use your property in such a manner as not to injure another. This principle was the basis for the holding in what is probably the most referenced case of international environmental law, *Trail Smelter*.²¹⁶ The case involved a smelter that was discharging sulfur dioxide near the town of Trail in British Columbia. According to the United States, the sulfur dioxide drifted over parts of Washington state, thereby damaging commercial forests. The U.S. and Canada referred the case to arbitration, which held for the United States on the basis that countries have a duty not to use, or allow the use of, their territory for activities harmful to another state.²¹⁷ Since then, the principle has been reiterated in international agreements and domestic tribunals.²¹⁸ The arbitration award did emphasize that, based on traditional tort law, the plaintiff has to show both material damage and causation. Thus, purely speculative damage is not actionable.

Christopher Greenwood, State Responsibility and Civil Liability for Environmental Damage Caused by Military Operations, NWC Symposium Paper, *supra* note 12, at 2.

²¹⁶ *Trail Smelter Case* (U.S. v. Can.), 3 Rep. Int'l Arb. Awards 1911 (1941). For an interesting revisionist view of the case, see Karin Mickelson, *Rereading Trail Smelter*, 31 Can. Y.B. Int'l L. 219 (1993).

²¹⁷ "(U)nder the principles of international law, as well as of the law of the United States, no State has the right to use or permit the use of its territory in such a manner as to cause injury by fumes in or to the territory of another or the properties or persons therein, when the case is of serious consequence and the injury is established by clear and convincing evidence." *Trail Smelter*, *supra* note 216, at 1965. Interestingly, in addition to international law the Arbitral Tribunal looked to domestic law, including such U.S. Supreme Court cases as *Missouri v. Illinois*, 200 U.S. 496 (1906), dealing with water pollution, and *Georgia v. Tennessee Copper Company*, 206 U.S. 230 (1907), an air pollution case.

²¹⁸ See, e.g., LOS Convention, *supra* note 161, art. 194(2). "States shall take all measures necessary to ensure that activities under their jurisdiction or control are so conducted as not to cause damage by pollution to other States and their environment, and that pollution arising from incidents or activities under their jurisdiction or control does not spread beyond the areas where they exercise sovereign rights...." See also Convention on Long-Range Transboundary Air Pollution, Nov. 13, 1979, pmbl., 18 I.L.M. 1442 (1979). For examples of national cases, see *North Holland Province v. Sate Ministry of Environment*, Administrative Tribunal of Strasbourg, July 27, 1983, *Revue Juridique de l'Environnement* 343 & *Handelswerkerij G.T. et al v. Mines de Potasse d'Alsace*, District Court of Rotterdam, Dec. 16, 1983, *cited in* Antoine, *supra* note 46, at 519.

Though there have been no further international cases specifically addressing environmental damage, others do bear more generally upon uses of one's territory which cause damage beyond the borders. The most notable illustration was the *Corfu Channel Case*.²¹⁹ *Corfu Channel* involved two British warships that were damaged in 1946 when the vessels hit German mines in Albanian waters in the Straits of Corfu. Several sailors were killed. On the issue of state responsibility, the ICJ ruled in the United Kingdom's favor, finding that Albania must have known of the mines' presence, but did nothing to warn the ships. Although oft cited for its holding regarding a later exchange of gunfire between the Royal Navy and Albanian shore batteries, as well as the issue of whether the U.K. was justified in sweeping the straits for mines, as it bears on the environment *Corfu Channel* stands for the principle that a state is obligated to refrain from allowing its territory to be used in a fashion that causes harm to others.

Two interesting cases which might have moved the law forward had they been decided are the *Nuclear Test Cases*. Resorting to the ICJ, New Zealand and Australia charged that French atmospheric nuclear testing in the South Pacific harmed them. The case was never heard on the merits because France voluntarily ceased testing. When it did so, the ICJ dismissed the case as moot.²²⁰ Interestingly, prior to the French agreement to halt the tests, the court did issue interim relief in the form of an order that France was to stop tests pending a final decision on the merits.²²¹ While this might be characterized as suggesting sympathy for the Australia/New

²¹⁹ *Corfu Channel Case*, (U.K. v. Alb.), 1949 I.C.J. 4. See also the *Lake Lanoux Arbitration*, in which an arbitral decision held that while Spain cannot preclude France from using upstream water as it sees fit, as a matter of equity France should consider Spain's counterproposals for use. *Lake Lanoux Arbitration* (Fr. v. Sp.), 12 Rep. Int'l Arb. Awards 281 (1957).

²²⁰ *Nuclear Tests* (Aust. v. Fr.), 1974 I.C.J. 253; *Nuclear Tests* (N.Z. v. Fr.), 1974 I.C.J. 457.

²²¹ *Nuclear Tests* (Aust. v. Fr.), 1973 I.C.J. 99 (Interim Protection Order of June 22); *Nuclear Tests* (N.Z. v. Fr.), 1973 I.C.J. 135 (Interim Protection Order of June 22).

Zealand position, a better reading is that it was merely standard injunctive relief designed to foreclose the *possibility* of irreparable harm.

General acceptance of the *Trail Smelter* principle was perhaps best signaled when the American Law Institute included a section addressing the concept in its Restatement (Third) on Foreign Relations Law in the United States.²²² Since it succinctly sets forth not only the substantive law, but also the concept of state responsibility, it merits quotation in full.

(1) A State is obligated to take such measures as may be necessary, to the extent practicable under the circumstances, to ensure that activities within its jurisdiction or control

(a) conform to generally accepted international rules and standards for the prevention, reduction and control of injury to the environment of another state or of areas beyond the limits of national jurisdiction; and

(b) are conducted so as not to cause significant injury to the environment of another state or of areas beyond the limits of national jurisdiction.

(2) A state is responsible to all other states

(a) for any violation of its obligations under Subsection (1)(a), and

(b) for any significant injury, resulting from such violation, to the environment of areas beyond the limit of national jurisdiction or control.

(3) A state is responsible for any significant injury, resulting from a violation of its obligations under Subsection (1), to the environment of another or to its property, or to persons or property within that state's territory or under its jurisdiction or control.²²³

Would this principle apply in times of armed conflict? That would appear to depend on the context in which application is sought. The principle is less about the environment than about state responsibility for the use of its territory. In the *Trail Smelter* case, for example, the importance of the environmental element is subsumed in the broader principle imposing an

²²²Restatement (Third), Foreign Relations Law of the United States (1987).

²²³*Id.* sec. 601 (State Obligation with Respect to the Environment of Other States and the Common Environment). Professor George Walker has argued that the Restatement is "not very helpful when law of armed conflict issues interface with the Law of the Sea and environmental law." For his analysis, see Walker, *supra* note 47, at 192.

obligation to protect other states from injurious acts emanating from within one's own borders. Characterized this way, it would be illogical for the principle to apply between belligerents, for use of one's territory to damage an enemy is the essence of warfare.

But what about harm caused to non-belligerents? There is nothing necessarily inconsistent between an obligation to avoid harm to the territory of a non-belligerent and hostilities with a third state. Nevertheless, this is a much more complex question. The most basic principle of neutrality law is that the territory of neutral powers is generally inviolable.²²⁴ Would the passage of pollutants into a nonbelligerent's territory constitute a violation of territorial integrity? It might not; the breach by Canada in *Trail Smelter* was that *damage* was caused from its territory, not that substances originated there and passed into the United States. The key is effect, not movement. Further, the neutrality principle was traditionally based on physical intrusions, usually by military assets of the belligerents.²²⁵

A better approach is to recognize that the entire body of neutrality law is premised on the need to balance the rights of neutrals and belligerents during armed conflict. In other words, the *Trail Smelter* case should stand for the premise that causing, or allowing to be caused, environmental damage in another country can lead to state responsibility unless belligerent interests served by the action in question outweigh the victim state's interests in avoiding the damage. Relevant factors would include the magnitude of harm caused and the nature of the threat to the "breaching" state that necessitated the harmful actions. This mode of analysis is not

²²⁴Hague Convention (No. V) Respecting the Rights and Duties of Neutral Powers and Persons in Case of War on Land, Oct. 18, 1907, art. 1, 36 Stat. 2310, II Malloy Treaties 2290. See also Department of the Army, *The Law of Land Warfare* (Field Manual 27-10), ch. 9, (1956). For neutrality at sea, see Hague Convention (No. XIII) Concerning the Rights and Duties of Neutral Powers in Naval War, Oct. 18, 1907, 36 Stat. 2415, 1 Bevans 723.

²²⁵For two useful primers on the purposes underlying the law of neutrality, see Walter L. Williams, *Neutrality in Modern Armed Conflicts: A Survey of the Developing Law*, 90 Mil. L. Rev. 9 (1980); Patrick M. Norton, *Between Ideology and the Reality: The Shadow of the Law of Neutrality*, 17 Harv. Int'l L.J. 249 (1976).

unprecedented in international law. Blockade law, for instance, emerged from a need to balance belligerent interests in effective warfare with neutral interests in expanding international commerce.²²⁶ It would be reasonable to conduct a like balancing here. In much the same way that an interest in international commerce arose, particularly in the 19th century, an interest in being free from environmental damage has surfaced in the latter half of this one. This being so, it is appropriate that sovereignty interests in the use of one's territory, and in effectively conducting combat operations, yield to some extent in the face of growing international concern over the environment.²²⁷

Environmental *treaty* law is much narrower than the general principles discussed above in the sense that it tends to focus on a single component of the environment. In fact, the only rules that are designed to protect the environment in general are found in non-binding instruments. Given the multitude of environmental provisions scattered throughout international conventions, and the many international, regional and bilateral agreements addressing specific issues, three have been selected for sake of illustration -- the Law of the Sea Convention, the Convention for the Protection of the Ozone Layer and the Convention on Long-Range Transboundary Air Pollution. As mentioned earlier, the essential task when considering the issue of peacetime environmental prescriptions is not to catalogue them, since it is a body of law that is constantly evolving, but rather to understand when peacetime instruments and legal principles apply in armed conflict.

²²⁶ See Michael N. Schmitt, *Aerial Blockades in Historical, Legal and Practical Perspective*, 2 USAFA J. Leg. Stu. 21, 24-33 (1991).

²²⁷ The remedy for a breach is set forth in Section 602(1): "A state responsible to another state for violation of section 601 is subject to general interstate remedies to prevent, reduce or terminate the activity threatening or causing the violation, and to pay reparations for the injury caused." Restatement (Third), *supra* note 222, sec. 602(1).

The Law of the Sea (LOS) Convention is the first global attempt to limit marine pollution in any comprehensive way.²²⁸ This 1982 instrument, which only entered into force in 1994, requires states to take whatever measures are necessary “to prevent, reduce and control pollution of the marine environment from any source, using for this purpose the best practicable means at their disposal.”²²⁹ It also restates the general principle that states must ensure activities over which they exercise control or jurisdiction do not cause damage to other states or their environment.²³⁰ Interestingly, this standard does not contain the Restatement qualifier “*significant*” when describing the quantum of damage necessary to trigger the protections.

While these statements would appear very broad, the LOS Convention excludes any vessels owned or operated in non-commercial service by a government, including warships, from compliance with its marine protection principles.²³¹ Does this mean that the Convention is devoid of environmental provisions which might offer protection in a wartime environment?²³² It does

²²⁸LOS Convention, *supra* note 161. One of the precursors to the Law of the Sea Convention, the 1958 Convention on the High Seas, addressed marine pollution in but two provisions. Article 24 required state regulation of marine pollution by oil discharges from vessels, pipelines or deep seabed activities, whereas Article 25 called upon parties to prevent pollution of the seas from radioactive materials. Convention on the High Seas, Apr. 29, 1958, arts. 24-25, 13 U.S.T. 2312, 450 U.N.T.S. 82. The non-binding Stockholm Declaration, in Principle 7, exhorted states to take “all possible steps” to prevent marine pollution. Stockholm Declaration, *supra* note 194, princ. 7.

²²⁹LOS Convention, *supra* note 161, art. 194.1. The LOS Convention defines pollution of the marine environment as “the introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of sea water and reduction of amenities.” *Id.* art. 1.1(4).

²³⁰“States shall take all necessary measures necessary to ensure that activities under their jurisdiction or control are so conducted as not to cause damage by pollution to other states and their environment....” *Id.* art. 194.2.

²³¹“The provisions of this Convention regarding the protection and preservation of the marine environment do not apply to any warship, naval auxiliary, other vessels or aircraft owned or operated by a State and used, for the time being, only on government non-commercial service.” *Id.* art. 236.

²³²Though not on point at this juncture, the Convention does contain two provisions relevant to the issue of the *jus ad bellum*. In Article 88, it provides that “(t)he high seas shall be reserved for peaceful purposes,” whereas in Article 301 it states that “(i)n exercising their rights and performing their duties under this Convention, States parties shall refrain from any threat or use of force against the territorial integrity of political independence of any State, or in any other manner inconsistent with the principles of international law embodied in the Charter of the

not, because it is entirely possible for a state to cause the spill of pollutants (oil) from vessels which are not exempted. That is exactly what the Iraqis did when they began releasing oil from commercial tankers during the Gulf War.²³³ Perhaps more importantly, the agreement encompasses activities other than those emanating from vessels. For instance, its general principles specifically apply to minimizing the release of "toxic, harmful or noxious substances, especially those which are persistent, from land based sources."²³⁴ The release of oil from shore based facilities during the Gulf War immediately comes to mind. They also extend to "installations or devices operating in the marine environment" other than vessels, a provision clearly bearing, e.g., on off-shore oil platforms.²³⁵ Additionally, parties are obligated to, through domestic legislation and in cooperation with international organizations, adopt laws and measures designed to preclude marine pollution originating from shore based or seabed activities, as well as from or through the atmosphere.²³⁶

The problem with each of these prescriptions is their inherent imprecision. By what standard, for example, should a state's cooperation with international organizations be measured? What steps satisfy the requirement to "minimize" releases? What does the phrase "necessary measures" encompass? There is little question that the LOS Convention will be difficult to apply in practice. That said, law is seldom precise, nor should it always be. It has to be flexible enough to fit a multiplicity of situations, many unforeseen at the time the law emerges. Moreover, the

United Nations." *Id.* arts. 88, 301. Of course, neither article would preclude a state's exercise of appropriate collective or individual self-defense under U.N. Charter Article 51.

²³³Iraq ratified the LOS Convention in 1985.

²³⁴*Id.* art. 194.3(a).

²³⁵*Id.* art. 194.3(d).

²³⁶*Id.* arts. 207, 208 & 212 respectively.

concerns expressed here are primarily about negligent or reckless conduct; the type of intentional conduct experienced during the Gulf War would not be nearly as susceptible to interpretive variation under the convention. As with all peacetime law, though, applicability of the LOS Convention would have to be tested against the contextual standards suggested during the discussion of the theory of differentiation.

The convention's enforcement regime is unique in approach. With reference to pollution, it places authority, depending on the specific circumstances, in the hands of the flag, port or coastal state. Further, it provides for creation of an International Tribunal for the Law of the Sea to resolve convention based disputes. At the time of signing, ratifying or acceding to the convention, parties are required to accept the jurisdiction of this body (currently being established), the International Court of Justice or arbitral proceedings. By peacetime enforcement standards, this is a particularly robust system for remedying alleged wrongs.

A second sample treaty with potential prescriptive effect during armed conflict is the 1985 Vienna Convention for the Protection of the Ozone Layer.²³⁷ The normative component of the Ozone Convention is Article 2(1), by which parties agree to "take appropriate measures in accordance with the provisions of (the) Convention and of (related protocols) to protect human health and the environment against adverse effects resulting or likely to result from human activities which modify or are likely to modify the ozone layer."²³⁸ Beyond this, the agreement is essentially designed to foster the exchange of information on potential ozone layer damage. As to

²³⁷Vienna Convention for the Protection of the Ozone Layer, Mar. 22, 1985, T.I.A.S. No. 11097, *reprinted in* 26 I.L.M. 1529.

²³⁸ *Id.* art. 2(1). Adverse effects are defined as "changes in the physical environment or biota, including changes in climate, which have significant deleterious effects on human health or on the composition, resilience and productivity of natural and managed ecosystems, or on materials useful to mankind." *Id.* art. 1(2).

enforceability, the convention has few teeth. It provides for dispute settlement through negotiation or mediation, and encourages parties to agree in advance to the compulsory jurisdiction of the ICJ or binding arbitration.²³⁹

The third of the sample peacetime agreements is the Convention on Long-Range Transboundary Air Pollution of 1979.²⁴⁰ In it, states party express their determination to “protect man and his environment against air pollution and...endeavor to limit and, as far as possible, gradually reduce and prevent air pollution including long-range transboundary air pollution.”²⁴¹ The convention’s concept of transboundary air pollution is particularly interesting. It is defined as pollution originating in one state and causing harm in another, but in which the relative contribution from individual sources cannot be determined. This is a work around for the classic tort problems of determining causation and harm. In this sense, it certainly represents a step beyond the principle of responsibility expressed in *Trail Smelter*. On the other hand, though the *ambit* of responsibility is stretched beyond the traditional levels, the *standard* of responsibility is *de minimus*. Note the terminology -- “endeavor,” “as far as possible” and “gradually.” It would be difficult to craft a more purely aspirational norm. To compound matters, the convention does not impose conditions of responsibility or liability; instead, it merely encourages “negotiation” or resort to other “dispute resolution mechanisms.”²⁴²

To recap the state of peacetime environmental law and its applicability during armed conflict, it should be apparent that reports of its death during armed conflict are greatly

²³⁹*Id.* art. 11.

²⁴⁰Convention on Long-Range Transboundary Air Pollution, Nov. 13, 1979, T.I.A.S. No. 10541, 18 I.L.M. 1442 (1979).

²⁴¹*Id.* art. 3.

²⁴²*Id.* art. 13.

exaggerated. Nevertheless, much uncertainty plagues the topic. The most reasonable approach is one in which the determination of whether a treaty survives armed conflict is based on a contextual evaluation employing factors such as those suggested. As to the *Trail Smelter* principle, applicability during hostilities is optimally dependent on a balancing of belligerent and non-belligerent interests.

The substantive law presents less of an analytical problem because, at least to date, it offers little normative guidance of direct relevance to warfare beyond the hortatory and aspirational. Peacetime law was not intended to be responsive to contexts involving the intent to create environmental destruction or use the environment as a weapon. What is contemplated, then, is extension of a law designed primarily for either reckless/negligent acts or intentional ones motivated by a purpose other than harm. This is reflected in the limited remedies available to injured parties. Also apparent is an inherent tension between developing and developed states when considering the requirements of development in light of the desire to protect the environment. Thus, application of peacetime environmental law will be limited during armed conflict by competing interests, much as the *Trail Smelter* principle was limited by the interests of belligerents in effective warfighting. The net result of these factors is that, despite some very useful provisions (and even if consensus could be reached on its applicability), peacetime environmental law does not represent a very robust contribution to existing wartime environmental protection.

Finally, mention should be made of legal responsibility, a topic applicable to both war and peace.²⁴³ Whereas the law of armed conflict provides for individual responsibility (e.g., war

²⁴³ Though an in-depth analysis is beyond the scope of this article, two excellent studies of the topic are: L.C. Green, *State Responsibility and Civil Reparation for Environmental Damage*, NWC Symposium Paper, *supra* note 12; Greenwood, *supra* note 215.

crimes), the peacetime instruments set forth above generally do not. For instance, the Restatement provisions do not mention the possibility that wrongful environmental damage might rise to the level of an international crime. Therefore, to the extent that peacetime prescriptions are carried forward into armed conflict, they would not form the basis, in and of themselves, for criminal responsibility.

That said, there is little question about *state* responsibility. If peacetime prescriptions remain in effect, it is illogical to deny that their remedy provisions do as well. The principle that states are responsible for the wrongful acts of their agents, i.e., officials, armed forces, etc., supports this premise.²⁴⁴ Yet, some practical and legal uncertainty remains. How do you assess responsibility in multilateral operations? Should liability be joint and several? How do you measure the quantum of harm, recalling, for instance, the imprecision of the initial estimates in the Gulf War? How do you handle potential harm that may not become obvious for many years after an event? Who has standing to assert claims for damage caused to the global commons? Are the relevant obligations *erga omnes*, such that they can be enforced by any state?²⁴⁵ How should the two peacetime principles which relieve a state of responsibility -- distress and necessity -- apply in

²⁴⁴ This is evident by reference to numerous law of war treaties which provide for such responsibility. For instance, Hague IV provides that "(a) belligerent party which violates the provisions of the said Regulations shall, if the case demands, be liable to pay compensation. It shall be responsible for all acts committed by persons forming part of its armed forces." Hague IV, *supra* note 121, art. 3. A nearly identical provision is found at Protocol I, *supra* note 8, art. 91.

²⁴⁵ The concept of *erga omnes* appears in the Barcelona Traction Case. There, the I.C.J. held that...

an essential distinction should be drawn between the obligations of a State towards the international community as a whole, and those arising vis-à-vis another State....By their very nature the former are the concern of all States. In view of the importance of the rights involved, all States can be held to have a legal interest in their protection; they are obligations *erga omnes*. Such obligations derive, for example, in the contemporary international law, from outlawing acts of aggression, and of genocide, as also from the principles and rules concerning the basic rights of the human person, including protection from slavery and racial discrimination.

Barcelona Traction, Light & Power Co. (2d Phase) (Belg. v. Sp.), Judgment of Feb. 5, 1970, I.C.J. Rep. 3, 33. The court did not indicate how obligations *erga omnes* were to be enforced.

a wartime context?²⁴⁶ These and other gaps remain in this very essential component of the legal regime designed to deter environmental destruction.

B. Customary Jus in Bello

Custom is at the very core of the *jus in bello*. Indeed, as a source of the law of war it predates any of the applicable treaty law currently in force.²⁴⁷ To achieve the status of customary law, a norm must be evident in widespread state practice over time and the international community has to exhibit *opinio juris sive necessitatis*, a conviction that the rule is obligatory.²⁴⁸ In other words, custom is both a behavioral and perceptual entity.

The foundational customary principle of the law of war, codified in Hague IV and elsewhere, is that “the right of belligerents to adopt means of injuring the enemy is not unlimited.”²⁴⁹ From this principle flow a number of subsidiary principles which underlie much of the remainder of the law of war, whether found in custom or treaties.²⁵⁰ They are perhaps best

²⁴⁶ See Draft Articles of State Responsibility, *supra* note 213, arts. 32-33. For a discussion of this issue, see Leibler, *supra* note 175, at 76-77.

²⁴⁷ That custom can form the basis for war crimes charges was acknowledged by the International Military Tribunal at Nuremberg. It specifically notes that, “All the defendants committed War Crimes...(pursuant to) a Common Plan or Conspiracy....This plan involved...the practice of ‘total war’ including methods of combat and of military occupation in direct conflict with the laws and customs of war” (emphasis added). Indictment, International Military Tribunal, Nuremberg, 1 T.M.W.C. 42 (1947). Today, this premise is itself accepted as a principle of customary international law.

²⁴⁸ The Statute of the International Court of Justice defines custom as “a general practice accepted by law.” Statute of the International Court of Justice, June 26, 1977, art. 38(1)(b), 59 Stat. 1031, T.S. No. 933, 3 Bevens 1153, 1976 Y.B.U.N. 1052. The Restatement notes that custom “results from a general and consistent practice of states followed by them from a sense of legal obligation.” Restatement (Third), *supra* note 222, sec. 102(2). See also *The Paquete Habana*, 175 U.S. 677, 20 S.Ct. 290, 44 L.Ed 320 (1900); *The Case of the S.S. Lotus* (Fr. v. Turk.), 1927 P.C.I.J. (ser. A) No. 10(1927); *Asylum Case* (Col. v. Peru), 1950 I.C.J. 266; *Case Concerning Right of Passage over Indian Territory* (Port. v. India), 1960 I.C.J. 6.

²⁴⁹ See, e.g., Hague IV, *supra* note 121, art. 22 and Protocol I, *supra* note 8, art. 35(1). The principle was first recognized in the St. Petersburg Declaration of 1868, 18 Martens III 474, 1 Am. J. Int’l L. Supp. 95 (1907).

²⁵⁰ Unfortunately, though the substance of these principles is subject to little debate, the form in which they are expressed often varies. For instance, the Air Force version employs the categories of military necessity, humanity, and chivalry, with proportionality folded into necessity, whereas the Navy uses necessity, proportionality and

understood as grouped into four broad categories: military necessity, proportionality, humanity and chivalry. Chivalry, which involves such matters as perfidy and ruses, is of only peripheral relevance to the study and will not be discussed.

1. Military Necessity

Military necessity prohibits destructive or harmful acts unnecessary to secure a military advantage. It is well settled that a violation of the principle can constitute a war crime. Article 6(b) of the Charter of the International Military Tribunal specifically characterized "...the wanton destruction of cities, towns or villages or devastation not justified by military necessity" as such.²⁵¹ The offense was further clarified in an oft cited passage from a well known war crimes trial, *The Hostage Case*:

(Military necessity) does not permit the killing of innocent inhabitants for purposes of revenge or the satisfaction of a lust to kill. The destruction of property to be lawful must be imperatively demanded by the necessities of war. Destruction as an end in itself is a violation of international law. There must be some reasonable connection between the destruction of property and the overcoming of the enemy forces.²⁵²

By this standard, an actor must be able to articulate the *imperative military* advantage *intended* to be gained. In other words, the act must neither be wanton nor of marginal military value, and military motivations must underlie it.

There are two basic challenges in applying the principle of military necessity to environmental damage. First, the standard invites interpretive variance. Most importantly, what

chivalry. AFP 110-31, *supra* note 164, at para. 1-3; NWP 1-14M, *supra* note 167, at 5-1. In substance and application, though, the principles are identical across the military services.

²⁵¹ Agreement for the Prosecution and Punishment of the Major War Criminals of the European Axis Powers and Charter of the International Military Tribunal, Aug. 8, 1945, art. 6(b), 59 Stat. 1544, 82 U.N.T.S. 27.

²⁵² *The Hostages Case* (U.S. v. List et al.), 11 T.W.C. 759, 1253-54 (1950).

do the phrases “imperatively demanded” and “reasonably connected” mean? Restated, how “direct” must an advantage be before an act becomes militarily necessary? A subjective concept, directness can be placed along a continuum. Somewhere on that continuum a “direct” advantage becomes “remote” in nature. The question is where.

The fact that the delineation point is contextually determined renders it difficult to identify. All would agree, for example, that it would generally be permissible to set fire to a field through which a superior enemy force was advancing in order to halt the advance or mask one’s own retreat. The advantage is direct and military in nature. But would it be permissible to set fire to the same field in order to demoralize the rural population and turn it against continuation of the war? Clearly not. The advantage is military only in a convoluted sense and obviously remote. In legal terms, the chain of causation is too attenuated. This is an easy case. The tough ones lie in the middle. Using a Gulf War example, did setting oil wells on fire to obscure Coalition targeting offer a direct military advantage? Opinions vary. If it did, at what point had enough been set ablaze to suffice, such that igniting further wells was “wanton”? The contextual character of military necessity was equally apparent in the post-World War II war crimes trials. Scorched earth policies were held acceptable when motivated by military need in exceptional circumstances, but condemned when resulting destruction was found to be wanton.²⁵³ The point is that the difficulty in understanding whether an act is militarily necessary is compounded by the fact that it cannot be assessed in the abstract. Only in extreme cases will violation of the principle be apparent on the face of the action.

²⁵³On this topic generally, see International Committee of the Red Cross, *Commentary: Geneva Convention Relative to the Protection of Civilian Persons in Time of War* 302 (J. Pictet ed. 1958). The set of four ICRC Commentaries edited by Jean Pictet is the definitive source on interpretation of the Geneva Conventions of 1949.

A related definitional problem lies in discerning requisite likelihood. Return again to the Gulf War. Assuming *arguendo* that the Iraqi oil spill was intended to foil amphibious landings (and did not violate any other legal prescriptions), how likely must those landings have been before the advantage sought was direct? Is there a point at which the unlikelihood of occurrence renders an advantage remote? There must be, for surely no one would argue that military necessity is consistent with destructive measures taken to counter *any* theoretical threat. To shift direction slightly, query how likelihood of *success* figures in? A tactic or operation may very well evidence an obvious chain of causation, and the threat posed may have a high likelihood of occurrence, but what degree of certainty of success is required to reach the “direct” advantage threshold? Unless one is willing to accept the premise that the principle of military necessity is only intended to prevent wanton (vice wildly speculative) acts, likelihood of occurrence and success must be directly relevant to military necessity calculations.

This latter point leads to the second challenge in determining military necessity, that of ascertaining intent. The essence of the principle is a prohibition on wanton, or largely irrelevant, destruction. Wantonness, in turn, implies the absence of intent to secure a military advantage. Thus, though formal reiterations of the principle found in such sources as law of war manuals often do not include an intent element, one must be read into the prescription in practice. The Gulf War illustrated this point. For instance, the DOD Report asserted that had Iraq’s goal been to obscure target acquisition by Coalition pilots, it could simply have opened the valves and ignited the oil that spilled. Therefore, the destruction of the oil wells themselves was characterized as an indication of Iraq’s “punitive” intentions.²⁵⁴ Arguing from the negative, had the intent *not* been punitive, the requirements of military necessity would have been met. Therein

²⁵⁴DOD Report, *supra* note 63, at O-27.

lies the quandary. Given that intent is relevant, how is it to be determined in cases where the act in question is reasonably subject to differing interpretations?

Acknowledgment of such interpretative and applicative difficulties hardly represents a jurisprudential epiphany on the subject of military necessity. The question, however, is whether environmental issues will exacerbate them. Unfortunately, they will, at least until warfighters, military lawyers and scientists get their arms around the art and science of warfare as it relates to the environment. Our understanding of this relationship remains nascent. Consider just a few theoretical operational possibilities. How might a commander fold the ability to control weather into an offensive air operation? What use could obscurants be in defending against airborne assaults? How might flooding be used to protect a flank in an armored advance? These and other issues are only beginning to be explored.

To some extent, most emergent technologies or techniques present this type of dilemma. The more difficult it is to articulate a concept of employment, the harder it will be to justify an action as being of direct military advantage. Paradoxically, the difficulty will also hinder unambiguous characterization of it as a violation of the military necessity principle. To further complicate matters, the less established the technique or tactic in military practice, the more difficult it will be to impugn intent to the actor. Lastly, necessity is harder to calculate because novelty generally lowers the reliability of probability of success estimates.

A final criticism of the principle is that it operates at cross purposes with the aims of the law of armed conflict, particularly its environmental component. As one distinguished commentator has noted, “(t)he dictates of military necessity, as assessed by opposing leaderships, have taken consistent precedence over the laws of war in almost every critical aspect of

belligerent policy.”²⁵⁵ While it is accurate that commanders and their judge advocates may occasionally argue that military necessity justifies an action, such assertions are about proportionality, not necessity. After all, the statement implies that a balancing has occurred. Military necessity, by contrast, is less balancing than it is placement along a continuum. Thus, the criticism wrongly characterizes the assertion.

Much more importantly, it seems to turn military necessity on its head. Recall the international law maxim that what is not forbidden is permitted. Military necessity operates within this paradigm to *prohibit* acts which are not militarily necessary; it is a principle of limitation, not authorization. Therefore, properly applied in its legal sense, military necessity as a principle *justifies* nothing. The criticism also evidences a mischaracterization of military necessity as in opposition to the law of war. In fact, it is an integral part of that *corpus* of law. The criticism would be more appropriately directed to the principle of *war* labeled “objective,” rather than to a principle of law. It makes little sense to suggest the *legal* principle of necessity runs counter to the law of war itself.

The point to the discussion of challenges presented by the principle of military necessity is not to suggest that it is becoming passé vis-à-vis environmental issues. Instead, it is merely that before accepting the premise that existing law is adequate, we must understand how much more complex the task of judging military necessity is made by factoring in environmental considerations.²⁵⁶

²⁵⁵ Richard A. Falk, *Revitalizing International Law* 168 (1989).

²⁵⁶ The difficulty in applying the concept was recognized in the Greenpeace Study, as was imprecision of definition. “It is in the interpretation of military action, and specifically the concept of ‘military necessity’ (the anticipated military value of one’s own action), that there is significant international disagreement as to the proper conduct of war. Military necessity is not defined anywhere in the laws of war, but it is intertwined with proportionality and discrimination, the central principles of the ‘just war’ tradition.” Greenpeace Study, *supra* note 63, at 115.

2. Proportionality

The difficulties in assessing military necessity pale beside those surrounding proportionality. Proportionality is a concept complementary to, and often considered a component of, military necessity.²⁵⁷ It is perhaps best characterized as that principle of customary international law which prohibits injury or damage disproportionate to the military advantage sought by an action. Measured not in terms of immediate advantage, but rather with regard to the operation as a whole, the concept extends to both collateral damage suffered by civilians and civilian objects and destruction of otherwise legitimate targets.²⁵⁸

Being relative, proportionality can be placed along a continuum. At some point on that continuum at which a proportionate impact becomes disproportionate; the balance shifts. In that dissimilar values systems -- military and humanitarian -- are being compared, this point is very difficult to discern. To illustrate, if the target is a command post near a residential area, how many surrounding homes may be destroyed before the effort to disable it becomes disproportionate? Similarly, what is the value of an enemy aircraft in terms of human lives, or how do you compare the suffering caused by destruction of joint civilian-military facilities such as electrical generating facilities with the military utility of disrupting the enemy's command and control?²⁵⁹

²⁵⁷The concept is often confused with a principle of war, economy of force. Economy of force is a common sense warfighter's rule of thumb that it does not make sense to apply more force to attaining the objective than necessary. The legal concept of proportionality, by contrast, measures advantage against damage caused.

²⁵⁸Generally, though, proportionality regarding legitimate targets is more easily dealt with as a military necessity issue.

²⁵⁹For a discussion of proportionality in the context of attacks on electrical targets, see William Arkin, *Target Iraq: A Documentary History of the Air War*, ch. 9 (unpublished manuscript, forthcoming). Mr. Arkin is a human rights activist who specializes in military affairs. He puts interesting, albeit somewhat unconventional, spin on how to make proportionality calls in difficult cases.

The difficulty of making proportionality calculations has been a key impetus towards codification of the law of war. In theory, codification serves to render legal concepts more manageable. It also eases the task of disseminating them to those charged with deciding on and executing courses of action. Unfortunately, despite the growing body of codified law of war, in many cases no particular provision exists on point to facilitate a specific proportionality calculation. Faced with this predicament, warfighters are sometimes instructed to use no more force than necessary to achieve their objective. However, economy of force is a principle of war, not a valid legal prescription under the *law* of war. In fact, there are situations in which application of minimum necessary force against an otherwise lawful target would produce disproportionate results. Therefore, absent a specific provision in treaty law, we are essentially thrown back upon our own value systems for guidance (or, perhaps more accurately, the value system deemed authoritative by the international community). In the end, then, is the law nothing more than an articulation of that fighter pilot adage to “trust your gut?” Or is it imbued with a meaning more distinct and developed, perhaps in the sense of the Martens Clause’s dictates of public conscience?

Whatever the answer, in terms of legal predictability and consistency, there are bound to be disturbing implications in any value based balancing test. Value is a cultural and contextual concept. Different societies may value life, suffering or objects differently. The play of this contextuality grows exponentially when considering the environment. If it is difficult to agree on proportionality when human life is in the balance, how can we hope to achieve consensus on the import of destroying habitats, harming air quality or disturbing food chains? The quandary is that proportionality requires the act of value *balancing*, but the very subjectivity of value renders

agreement on specific balances highly elusive. Just imagine, e.g., the difference of value that the United States and a failing state might impute to the environment.

Not only do varying cross-cultural value paradigms pose obstacles to objective proportionality estimations, but even within our own society the anthropocentric versus intrinsic value debate is an inevitable source of contention. All reasonable people would agree that the value of the environment should be measured, at least in part, by its direct impact on the state of human existence. Some would go further by arguing that the environment should be valued in and of itself, even in the absence of a specific benefit to mankind. In other words, the *actual* value of the environment is anthropocentric *plus* intrinsic value. This is the intrinsic value approach. Still others would take this mainstream intrinsic value perspective to its extreme by asserting that the environment merits protection even at human expense. In this radical cognitive perspective, human and environmental values are distinguishable -- *and equivalent* -- in the abstract. The more moderate intrinsic value approach would urge recognition of the autonomy of environmental value, but, all things being "equal", subordinate it to human values if forced to choose between the two.

The dilemma is that each approach will yield a different value for the environmental loss which military action causes. For instance, the first evaluator will see in a forest a useful source of raw materials. The second will acknowledge that quality, but also characterize it as an entity demanding respect in its own right. For the third evaluator, securing respect for the forest may even require human sacrifice. Nevertheless, in each of these cases the military advantage obtained by damaging the forest is fixed. As can be seen in this simple example, operation of the proportionality equation will not only be skewed by the subjectivity of value estimates (how

much), but, perhaps more importantly, by disagreement over *how and on what basis* to measure value in the first place.

Anthropocentric-intrinsic value tension is in evidence at the state to state level as well, a point illustrated at the Rio Conference in the developing states' insistence that environmental protections be balanced by the needs of development. Assuming this represents a trend, does it portend a developed - developing state split in attitude towards the appropriateness of the various cognitive perspectives? Perhaps the best way to characterize the situation is to suggest that while cognitive direction is very roughly constant across the international community (no one seems to be moving in the other direction), the velocity of the phenomenon is much greater in developed states. This is logical, for there is less economic friction. If the assessment is accurate, the cognitive gap between the camps will grow, at least until the economic gulf between developed and developing states narrows. The gap will pose the same obstacles to predictable and uniform application of the proportionality principle that differing cross-cultural valuation did.

This in turn raises another point regarding valuation in the proportionality calculation process, i.e., that value can be temporally determined.²⁶⁰ Valuation paradigms inevitably change as history evolves, a fact aptly demonstrated by the rise of environmental consciousness in the last half century. As this occurs, proportionality calculations shift accordingly. Reflect, as an example, on the assessment that would be made of the Huayuankow Dam incident if it were to occur today. One scholar has even suggested that this temporal feature of proportionality, and of customary law generally, is actually beneficial, for it permits the development of law parallel to

²⁶⁰ This is a point also noted by Michael Bothe. Bothe, *supra* note 260, at 55-56.

the development of societal values, without having to face the difficulties inherent in applying treaty law to novel situations.²⁶¹

The phenomenon of evolving value systems has many potential causes -- human experience, understanding of the environment and even technology. Of particular interest among law of war scholars and practitioners is the enormous attention that has been paid to the use of "smart" weapons during the Gulf War. To the extent it may be possible to further limit collateral damage, there will inevitably be a tendency to ratchet down the acceptable level of collateral damage, environmental or otherwise.

Admittedly, this ensues in part from necessity analysis. However, more subtle is the impact on proportionality processes. Though there may objectively be no shift in the value of the environment which is damaged (anthropocentric or intrinsic), a subjective revaluation is bound to occur once a perception that the damage can be avoided takes hold. This is because valuations are in part the product of emotions, and we are more emotional about entities damaged "unnecessarily." Once sensitized, proportionality calculations will be affected even when the necessity threshold has been met. Albeit not in the context of new technology, the Gulf War environmental experience offers a telling example of how this sensitization can work over time to alter existing valuation paradigms. When the Iraqis began spilling oil into the Persian Gulf and setting fire to well heads in actions that many felt were clearly unnecessary, the international community was enraged, thereby sensitizing the issue. As a result, in the next war, operations posing environmental risks are likely to be evaluated very closely before being approved as

²⁶¹"Subjecting principles of customary law to a modern, liberal interpretation, i.e., a time-related interpretation which takes account of changing and emerging values cherished by society, may be less objectionable than it would be in the case of treaty law. In the former case, state parties cannot claim so easily that they have accepted a precise obligation, and that 'that's it.'" Verwey, NWC Symposium Paper, *supra* note 12, at 8-9.

proportional. What is interesting is that this is so despite the fact that objectively the environment is no more valuable than it was six years ago. On the contrary, since predictions of what Gulf War damage would do to the environment were exaggerated, environmental concerns should actually have diminished somewhat. Yet, that has not occurred.

Valuation is, therefore, a temporally, contextually, culturally and conceptually determined process. Thus far, though, the complexity of the comparison between military advantage and resultant destruction/damage has only been explored in its two-dimensional aspect. Regrettably, it is necessary to further complicate matters by factoring in a third dimension, environmental versus *human* (vice military advantage) valuation. This dimension is present in two contexts: 1) risk to military personnel, and 2) non-environmental collateral damage. Several hypotheticals may help illustrate the point.

Assume shoulder launched surface to air missiles (SAM) are occasionally fired at military aircraft from a residential district along the only feasible route to the target area. Though the risk is *de minimus* in light of the planned flight profile, it remains theoretically possible that a lucky hit might be scored. Can the entire residential area be bombed in hope of killing the lone soldier who launches the SAMs? Obviously not. It is easy to make this calculation for two reasons. First, the *jus in bello* is neutral; there are no "bad guys." In our hypothetical, a remote risk to the life of one combatant is being weighed against certain risk to those of scores of civilians. That they are *enemy* civilians does not shift the balance. Second, and more determinative, is the fact that the proportionality decision in this case is a human-human calculation.

However, what degree of *environmental* protection would justify the assumption of risk by our pilots? What if the SAMs were being fired from a dam, the destruction of which would

destroy crop lands (anthropocentric valuation)? Harder still, what if destruction of the dam would destroy non-food source animal habitats (intrinsic worth valuation)? We are back to the apples - oranges problem, albeit writ large. The task is no longer deciding whether to forego gain, but instead whether to assume risk to protect the environment. Of course, the reflexive response is that environmental values cannot be balanced against human life, or even human suffering. But of course they can, assuming the very concept of environmental protection in warfare is valid.

Whenever a decision is made to forego an operation/tactic (or alter it) which otherwise meets the requirements of military necessity, the benefits of that necessity are lost. Since militarily necessary operations are often intended to lessen risk, either in the short or long term, a balance with human values has been implicitly made. The only way to avoid having to balance human and environmental values is to adopt a purely anthropocentric perspective in which protection of the environment is merely a by-product. What this demonstrates is that treating the environment *qua* environment in making proportionality calculations muddies the waters of an already complicated process.

Yet another iteration of complexity is that in certain circumstances it will be necessary to recognize that non-environmental risk to the *targeted* party, either directly or collaterally, may be increased by extending protection to the environment. For instance, should an avenue of attack which might devastate a fragile amphibian habitat be avoided if the only viable alternative will result in damaged farm land? An even broader scenario can be painted by giving the concept of military necessity wide play. Because military necessity contributes to the success of one of the belligerents, it may also (depending on whose benefit it inures to) hasten the end of hostilities.

That being so, putting the optimal mode of securing that militarily necessary objective aside in lieu of environmental protection may lengthen hostilities, thereby negatively impacting human values.

An obstacle to performing precise proportionality calculations is also apparent in determining *what* damage to weigh. When discussing military necessity, the problem of likelihood of occurrence was raised. Proportionality analysis evidences an analogous challenge in the form of uncertainty as to likelihood of harm. Simply put, when balancing collateral damage against military advantage, should the weight of *possible* damage be adjusted according to how likely the damage is to occur? Of course it should, but the problem is that whereas fairly reliable data is available on the effect of typical collateral damage (deaths, destruction of property, etc.), it is not available with regard to the environment. As the Gulf War demonstrated, estimates of the nature and quantum of environmental destruction can fall far from the mark.

Desert Storm highlighted a related problem. In addition to the difficulties of determining what damage will be caused, there is that of deciding how far down the chain of causation to proceed. During the Gulf War, aerial bombing brought criticism from some about its “reverberating effects.” For instance, William Arkin has written in detail about the unintended effects on civilians of bombing electrical targets.²⁶² How should proportionality analysis be conducted when efforts to take down obvious military objectives such as command and control nets result, e.g., in hospitals losing electricity? What responsibility do commanders have to consider reverberating effects in their legitimacy analysis?

The environment can only exacerbate such quandaries. Recall the brouhaha over the purported “Lorenz Effect,” in which a butterfly flapping its wings in Tokyo causes a thunderstorm

²⁶² Arkin, *supra* note 259, ch. 5.

in New York.²⁶³ The point is that when dealing with the environment, one is making calculations based on incredibly intertwined global relationships among the environment's seemingly infinite components. Unfortunately, despite the advances of science, man is only beginning to unravel this complexity. That being so, how does one identify and begin to factor in environmental reverberating effects? What level of environmental knowledge should be imposed on the commander making such assessments? To what degree must the commander attempt to ascertain potential reverberating environmental effects? Do environmental engineers need to join judge advocates in command posts to ensure commanders stay within the somewhat fuzzy confines of the law? These questions will prove particularly problematic because the valuation dynamics noted earlier in this section will influence each of the reverberating effects which may or may not be incorporated into the balancing process.

Ultimately, it might even be asked whether it is appropriate to apply the customary law of proportionality to environmental concerns at all, for there is certainly no long-standing practice of safeguarding the environment *per se* during armed conflict. Arguably, environmental benefits should be solely derivative, i.e., resulting from traditional customary law protections. For example, destruction of fish on a trout farm can be seen in terms of the customary law category of civilian objects. However, what about an act that rendered the fish stock infertile? Is that the kind of damage to civilian objects contemplated in our customary law? This matter becomes more complicated still as we move beyond anthropocentric protections. Assume that the fish are swimming free and not used as a food source. To what degree would the international community evidence *opinio juris sive necessitatis* in such a case? It is one thing to argue that the customary

²⁶³ The Lorenz (or Butterfly) Effect is used in chaos theory. For a discussion of the subject, see James Gleick, *Chaos: Making New Science* (1987).

law of proportionality must be flexible enough to provide protection to new objects which fall into traditionally protected categories. It is quite another to argue in the absence of state practice that protections should apply to newly recognized *categories*.

Hopefully, this discussion will have served to again display the complexity of factoring environmental considerations into the application of traditional law of war principles, in this case proportionality. Though some scholars might herald the demise of proportionality analysis,²⁶⁴ it remains a useful tool for securing humanitarian -- and environmental -- values during armed conflict. But it is no panacea; environmental considerations will complicate reliance on the principle if only because it will be difficult to achieve consensus on what is and is not proportional. Thus, proportionality is likely to serve as a completely predictable constraint in only the most aggravated cases of environmental damage during armed conflict.

3. Humanity

The principle of humanity prohibits methods and means of warfare which are inhumane.²⁶⁵ It is theoretically implicit in both military necessity and proportionality, but merits separate

²⁶⁴One distinguished international law scholar suggested at the time of the war that "(t)he enormous devastation that did result from the massive aerial attacks (during the Gulf War) suggests that the legal standards of distinction and proportionality did not have much practical effect." Oscar Schachter, *United Nations Law in the Gulf Conflict*, 85 Am. J. Int'l L. 466 (1991). This is a minority opinion. Most commentators characterize the air campaign as well within the bounds of legality. See, e.g., Roberts, *supra* note 16, at 41.

²⁶⁵Among the first formal expressions of the principle is the St. Petersburg Declaration of 1868. The Declaration provided:

Considering that the progress of civilization should have the effect of alleviating as much as possible the calamities of war;

That the only legitimate objet which States should endeavor to accomplish during War is to weaken the military forces of the enemy;

That for this purpose it is sufficient to disable the greatest possible number of men;

That this object would be exceeded by the employment of arms which uselessly aggravate the sufferings of disabled men, or renders their death inevitable;

That the employment of such arms would therefore be contrary to the laws of humanity....

characterization in order to highlight particular prohibitions, such as those forbidding indiscriminate techniques²⁶⁶ and unnecessary suffering. That environmental destruction can easily violate the principle of humanity should be obvious. Water supplies can be poisoned, destruction of food sources can result in starvation of innocents or air quality can be so lowered that respiratory distress results. Of particular concern is the environment's susceptibility to indiscriminate use or damage. Destruction of the Huayuankow Dam is a classic example of an indiscriminate act with disastrous environmental consequences.²⁶⁷ Other theoretical uses of the environment, such as generating tidal waves or earthquakes, changing climate or creating wetlands are also inherently indiscriminate; once set in motion their effects cannot be easily controlled. Given current technologies, it is difficult to envision an attack employing the environment which permits much discrimination at all.

Conceptually, the principle of humanity is overwhelmingly anthropocentric in nature. After all, it is labeled *humanity*. Nevertheless, the humanity principle is less utilitarian than the other customary principles, for it is not necessary to conduct a balancing test when applying it. In fact, any balancing that is required to assess humanity (e.g., in determining whether the suffering was "necessary") will likely be accounted for during the military necessity/proportionality analysis. If we put this cumulative component of humanity aside, the bulk of what remains are *ab initio* prohibitions on activities that are not so much inhumane as *inhuman*. They are acts we intuitively recognize as inherently wrongful regardless of the context in which they occur. In a sense, they are violative of the "dictates of public conscience."

St. Petersburg Declaration, Am. J. Int'l L., *supra* note 249, 95-95.

²⁶⁶ An indiscriminate technique insufficiently distinguishes protected persons (e.g., civilians) and objects from legitimate military objectives.

²⁶⁷ This example illustrates the relationship between humanity and proportionality.

The concept of an inherently wrongful act may offer an avenue for expanding protection of the environment. As was noted, the central difficulty with military necessity and proportionality was comparative valuation. What the principle of humanity offers is an opportunity to move beyond that conundrum to the simpler (in a relative sense) prospect of forging agreement on those things which civilized people *just don't do*. The immediate obstacle to doing so in the environmental context is that the principle of humanity is not generally thought of as applying to other than immediate human suffering. Thus, when environmental violence such as that which occurred during the Gulf War is considered, the analysis tends to be in proportionality/necessity, not humanity, terms. Legalistic minutiae aside though, the acts were seen by the global community at large as "just don't do that" violations, a cognitive perspective which best comports with humanity analysis. Arguably, it may portend the beginnings of a subtle expansion of the principle. The shift would be from a prescription understood within the "there are certain things you do not do to human beings" paradigm to that of "there are certain things which human beings do not do." This would serve to temper disputes, and avoid confusion, about the relative value of dissimilar objects and goals.

Despite the appeal of a process which eases the inherent difficulties of balancing tests, the risk of this tack is great. It implies acceptance of the proposition that in some cases environmental damage should be avoided regardless of the cost to humanity. Perhaps in truly extreme cases of environmental damage where a correspondingly high level of human suffering is *inevitable*, or where the likelihood of accruing military advantage is very low, this technique could be used as prescriptive shorthand for humanitarian concerns. In other words, human suffering is not being ignored, but instead simply being evaluated by a measure that offers ease of application.

Such prescriptions could be crafted in terms of type of technique (e.g., oil spills), quantum of damage (e.g., long-term, widespread and severe), target (e.g., the atmosphere) or any combination thereof. The defining characteristic, however, must be that it is not necessary to conduct complex analysis of the human suffering because, given the level of environmental damage, *res ipsa loquitur*. Thus, while the approach may offer some benefits, any movement in this direction should proceed very cautiously.

C. Treaty Based Jus in Bello

1. Key Non-Environment Specific Provisions

a. Hague IV

The Hague Conventions are reflective of changes in the nature of warfare which occurred with the Napoleonic Wars. They marked the evolution of war to a national endeavor, fought on a grand scale by armies sometimes numbering in the hundreds of thousands, and resulting in previously unimaginable carnage. This transformation led to efforts to limit the effects of armed conflict. One of the earliest was the First Hague Peace Conference, convened at the urging of Czar Nicholas II in 1899. Three instruments designed to limit armaments and their effects were produced.²⁶⁸ In 1907, a Second Hague Peace Conference was assembled on the initiative of Theodore Roosevelt. Of the 13 conventions that issued, Hague IV, which governs the conduct of land warfare, is environmentally relevant today.²⁶⁹ It remains in effect for its signatories, though

²⁶⁸ The Declarations included a ban on launching projectiles or explosives from the air, a prohibition on the use of projectiles containing asphyxiating or deleterious gases, and a ban on bullets which expand or flatten in the body (Dum Dum bullets). Final Act of the International Peace Conference, July 29, 1899, 1 Am. J. Int'l L. (Supp.) 103 (1907). Declaration 2 is found at Declaration Concerning Asphyxiating Gases, July 29, 1899, 1 Am. J. Int'l L. (Supp.) 157 (1907).

²⁶⁹ Hague IV, *supra* note 121.

party status is relatively unimportant because most of the treaty is now considered customary international law.²⁷⁰ In fact, "Hague Law" has become a general term of reference for laws of armed conflict designed to limit the *methods and means* of warfare.

Article 22 of Hague IV codifies the foundational customary law of war principle mentioned earlier, that the "right of belligerents to adopt means of injuring the enemy is not unlimited."²⁷¹ This principle is consistently cited as a conceptual basis for environmental prescriptions.²⁷² Also directly relevant is Article 23(e), which forbids the employment of "arms, projectiles or material calculated to cause unnecessary suffering."²⁷³ It applies to the environment in a manner analogous to the unnecessary suffering component of the humanity principle. As treaty rather than customary law, significant expansion of Article 23(e) beyond its intended anthropocentric application is unlikely. Instead, evolution in that direction will probably emanate first from its customary law counterpart.²⁷⁴

The most important Hague IV provision applicable to environmental damage is Article 23(g). It codifies the classic military necessity principle by noting that it is prohibited to "destroy or seize the enemy's property, unless such destruction or seizure be imperatively demanded by the

²⁷⁰This status was recognized by the International Military Tribunal in 1946. See Judgment and Sentences, International Military Tribunal, Oct. 1, 1946, extracted in Myres McDougal and W. Michael Reisman, *International Law in Contemporary Perspective* 1043, 1050 (1989).

²⁷¹ Hague IV, *supra* note 121, art. 22.

²⁷² For a pre-Gulf War argument along these lines, see Geoffrey Best, *The Historical Evolution of Cultural Norms Relating to War and to the Environment*, in *Cultural Norms, War and the Environment* 18 (Arthur H. Westing, ed. 1988).

²⁷³ Hague IV, *supra* note 121, art. 23(e).

²⁷⁴This contention is not universally accepted. One commentator has argued by reference to the French text that 23(e) "suffering" includes "property damage, environmental damage, or damage to anything." Leibler, *supra* note 175, at 100. This is an accurate characterization if the damage causes direct human suffering. However, an extension to property or environmental damage *per se* is not supportable. At any rate, such damage would likely be prohibited under Article 23(g).

necessities of war.”²⁷⁵ Though there is occasional discussion over whether the article is intended to protect all property or only state property, the better view as a matter of law, and that adopted by both the U.S. Army and the ICRC, is that it covers any property, wherever situated and however owned.²⁷⁶

Since Article 23(g) is the codification of the military necessity principle, the earlier discussion of that principle also applies here.²⁷⁷ One further issue bearing on environmental damage revolves around the definition of “property.” There is little question that Article 23(g) applies to tangible property such as land, cattle, crops or water supplies. In fact, the War Crimes Commission cited 23(g) in charges against ten German administrators of Polish forests for unnecessary destruction of timber resources.²⁷⁸ Its applicability in other environmental contexts is not as clear cut. For instance, is the atmosphere “property”? What about climate or the ozone layer? How would destruction of a straddling stock of fish or a migratory bird species be handled? These examples illustrate the determinative importance of evolving property concepts (e.g., with intellectual property) to contemporary and future understandings of Article 23(g).

A second key Hague IV provision relevant to environmental protection is Article 55. It provides that a belligerent occupying enemy territory “shall be regarded only as administrator and usufructuary of public buildings, real estate, forests, and agricultural estates belonging to the hostile State, and situated in the occupied country. (The occupier) must safeguard the capital of

²⁷⁵ Hague IV, *supra* note 121, art. 23(g).

²⁷⁶ Pictet, *supra* note 253, at 301; II Department of the Army, International Law (DA Pham. 27-161-2) 174 (1962).

²⁷⁷ This assertion is a bit over broad. As the ICJ has noted, “even if a treaty norm and a customary norm...were to have exactly the same content, this would not be a reason for the Court to take the view that the operation of the treaty process must necessarily deprive the customary norm of its separate applicability.” Military and Paramilitary Activities (Nicar. v. U.S.), 1986 I.C.J. 4, 84.

²⁷⁸ United Nations War Crimes Commission, Case No. 7150 469 (1948).

these properties, and administer them in accordance with the rules of usufruct.”²⁷⁹ As a usufructuary, the occupying power has the right of enjoyment of public property, including the right to reasonably exploit it for its natural resources. However, it may not permanently alter or destroy the property. By its own terms, the article does not become effective until open hostilities have ended in an area and a state of occupation has been declared, and it is limited to abuse or destruction of the four categories delineated. If hostilities in the area recommence, then Hague protection would revert to Article 23(g) military necessity.

Note should also be taken of the Martens Clause found in the Preamble to each of the Hague Conventions. Given the novelty of environmental considerations in warfare, it could prove to be a key protection afforded by Hague IV.

Until a more complete code of laws has been issued, the high Contracting Parties deem it expedient to declare that, in cases not included in the Regulations adopted by them, the inhabitants and the belligerents remain under the protection and the rule of the principles of the laws of nations, as they result from the usages established among civilized peoples, from the laws of humanity, and from the dictates of the public conscience.

A Martens Clause is also found in Protocol I²⁸⁰ and, as discussed earlier, is generally considered to be a principle of customary international law.

The benefit of this principle is that it operates during the evolution of prescriptive norms. As the law proper grapples with how to handle environmental issues, the “laws of humanity” and “dictates of public conscience” will theoretically serve to ensure a modicum of protection. Of course, the problem is that it is often difficult to extract specific prohibitions from “moral law and public opinion.” As has been noted, for example, saturation bombing of cities and the practice of

²⁷⁹ Hague IV, *supra* note 121, art. 55.

²⁸⁰ Protocol I, *supra* note 8, art. 1(2).

“dumping” bomb loads prior to returning to base during WW II “left the public conscience relatively undisturbed.”²⁸¹ Much of the difficulty will result from the surfacing of cross-cultural and inter-societal differences when determining whether a Martens situation has presented itself. That said, the provision does at least offer a final line of defense to those facing legalistic explanations of why traditional law of war does not apply in a particular situation.

How useful is Hague IV in limiting environmental damage during warfare? In the view of some, very much so. One distinguished commentator argued in 1992, e.g., that had the Hague IV principles “been observed by Iraq, there would have been no significant violation of the Kuwaiti environment.”²⁸² Similarly, the DOD Report on the Gulf War noted that the oil spills and sabotage of the oil wells were violations of Articles 22 and 23.²⁸³ While probably accurate, such characterizations are fact specific; they fail to demonstrate that the Hague IV prescriptions are sufficiently comprehensive or that they can successfully be applied in other scenarios. What if an amphibious operation had actually been imminent when the oil was spilled? What if the Iraqis had merely opened the valves on the oil wells and then set the pools ablaze as the DOD report noted they had not? Possibly more revealing still, what if the opponent had not been as universally ostracized as Saddam Hussein? Finally, query what the international reaction to the environmental destruction would have been if the victim had been different, e.g., Israel or Iran

²⁸¹DA Pam. 27-161-2, *supra* note 276, at 15.

²⁸²Terry, *supra* note 84, at 63. See also Michael Bothe, *Environmental Destruction as a Method of Warfare: Do We Need More Law?*, 15.2 Disarmament 101, 104, (1992), where it is asserted that the Iraqi actions violated the unnecessary suffering provision of Article 23(e).

²⁸³DOD Report, *supra* note 63, at O-22. Note that the convention contains a general participation clause, i.e., a provision to the effect that the treaty applies only between parties, and then only if all belligerents are parties. Hague IV, *supra* note 121, art. 2. Iraq was not a party to Hague IV. In 1907 it was still a part of the Ottoman Empire. Twelve years later Iraq became a British mandate, but Great Britain never acceded to Hague IV on its behalf. Therefore, when Iraq gained its independence in 1932 it did not have to acknowledge party status. Of course, the fact that the treaty is recognized as customary international law makes this point somewhat irrelevant.

instead of Kuwait. While it is certainly correct that Hague IV provides significant protection to the environment, these hypotheticals aptly illustrate potential fault lines.²⁸⁴

b. Geneva Convention IV

“Geneva law” is that component of the law of war, often labeled “humanitarian law,” which provides protections to certain categories of individuals and objects. Whereas Hague law governs what methods and means are appropriate in warfare, Geneva law delineates what and whom those methods can be used against. Thus, the two bodies of law are complimentary. There is a long lineage of Geneva Conventions stretching back to 1864. Today, the four 1949 Geneva Conventions are the most universally recognized instruments in the law of armed conflict and are considered to have become in great part customary international law. For the purposes of this study, the most relevant is Geneva Convention IV, which governs the protection of civilians and civilian objects in war.²⁸⁵

With regard to environmental destruction, Article 53 is the highlight of Geneva Convention IV. It provides that “(a)ny destruction by the Occupying Power of real or personal property belonging individually or collectively to private persons, or to the State, or to other public authorities, or to social or cooperative organizations, is prohibited, except where such destruction is rendered absolutely necessary by military operations.”²⁸⁶ Several characteristics of this prohibition are worthy of comment. First, though many objects are granted protection, it is limited, as in Article 55 of Hague IV, to occupied territory. Extension beyond occupied

²⁸⁴ Other Hague IV provisions that might bear on environmental damage in individual cases include the requirement to respect private property and the prohibition on pillage. Hague IV, *supra* note 121, arts. 46 & 47.

²⁸⁵ Geneva Convention IV, *supra* note 8.

²⁸⁶ *Id.* art. 53.

territories was felt unnecessary on the basis that Article 23(g) of Hague IV sufficed.²⁸⁷ Of course, also filling in the gap is the customary international law principle of military necessity. Thus, the criticism that has been leveled against the limited scope of Article 53 may be valid if the provision is viewed in isolation, but in terms of practical impact during armed conflict, it is inconsequential.²⁸⁸

Although applying only in occupied territories, the provision does offer meaningful protection because environmental damage often occurs there. This is particularly likely, if history is any indication, as an occupying force is being ejected. For instance, scorched earth policies in occupied territory during World War II formed the basis for multiple war crimes prosecutions.²⁸⁹ More recently, much of the environmental damage which occurred in the Gulf War took place as a result of property destruction in occupied Kuwait, most notably the oil wells. In fact, when the Commission for International Due Process of Law prepared a draft indictment of Saddam Hussein and his key advisers for submission to the UN Secretary General, a violation of Article 53 was specifically alleged.²⁹⁰ Most scholars and practitioners correctly agree with this characterization of Iraq's actions, a state which had acceded to the Convention in 1956.²⁹¹

²⁸⁷Pictet, *supra* note 253, at 301.

²⁸⁸ Richard A. Falk, *The Environmental Law of War: An Introduction*, in Plant *supra* note 86, at 78, 88.

²⁸⁹See, e.g., *The Hostages Case*, *supra* note 252. The trial dealt with destruction ordered by General Rendulic during the German evacuation of Norway. He was acquitted on the basis that it was necessary because he was under the (mistaken) belief that his forces were being pursued by the Russians. See also, *The High Command Case* (U.S. v. Von Leeb et. al.), 11 T.W.C. 462 (1950), for a case involving destruction in the Soviet Union.

²⁹⁰Luis Kutner & Ved Nanda, *Draft Indictment of Saddam Hussein*, 20 Denv. J. Int'l L. & Pol'y 91, 93 (1993). In Charge I, specification 10, they were charged with having "destroyed the real and personal property of protected persons and the State of Kuwait; this destruction was not absolutely necessary to military operations and occurred for the most part after military operations had ceased..." *Id.*

²⁹¹See, e.g., Roberts, *supra* note 16, at 39; McNeill, *supra* note 134, at 80; DOD Report, *supra* note 63, at O-22. Additionally, Professor Roberts and Mr. McNeill would concur with Michael Bothe that the actions constituted grave breaches under Article 147. Bothe, *supra* note 282, at 104.

Article 53 is caveated with the proviso that the prohibition does not apply when destruction is “rendered absolutely necessary by military operations.”²⁹² This leads us back into the interpretive maze of the customary law principle’s directness requirement. Although “absolutely” would seem to set a high standard, an extreme on the continuum of necessity if you will, it will still be subject to interpretation. As Jean Pictet has noted in his authoritative ICRC sponsored commentary on the convention, “(i)t is therefore to be feared that bad faith in the application of the reservation may render the proposed safeguards valueless; for unscrupulous recourse to the clause concerning military necessity would allow the Occupying Power to circumvent the prohibition set forth in the Convention.”²⁹³ To address this weakness, he urges occupying powers to try to interpret the provision reasonably and with a “sense of proportion in comparing the military advantages to be gained with the damage done.”²⁹⁴ The Catch-22 is that those states likely to follow Pictet’s admonition are the ones which least need to be deterred from “unscrupulous recourse to the clause.” At the same time, an unscrupulous belligerent is most likely to take advantage of the *additional* uncertainty which environmental concerns bring to necessity calculations.

Despite the difficulty in interpretation and application, one positive note is the fact that Article 147 of the Convention includes as grave breaches “extensive destruction...of property, not justified by military necessity and carried out unlawfully and wantonly.”²⁹⁵ As a result, a violation of Article 53 is a grave breach whenever the destruction involved is “extensive.” Characterization

²⁹² Geneva Convention IV, *supra* note 8, art. 53.

²⁹³ Pictet, *supra* note 253, at 302.

²⁹⁴ *Id.*

²⁹⁵ Geneva Convention IV, *supra* note 8, art. 147.

as a grave breach is crucial because parties to the convention are required to pass domestic legislation providing for punishment of those who commit or order grave breaches. More significantly, a party is obligated to search for offenders and bring them before its courts, regardless of nationality. Offenders may also, consistent with extradition agreements, be turned over to other states for prosecution.²⁹⁶ Therefore, while the prescription itself admits of imprecision, the sanctions mechanism should operate to heighten deterrence. Sadly, that it may not always have this effect was evidenced by the Gulf War, assuming the DOD Report's characterization of the Iraqi actions as violations of Articles 53 and 147 is accurate as a matter of law.²⁹⁷

Finally, some additional indirect protection for the environment is found in Article 147's inclusion of "willful killing...(and) willfully causing great suffering or serious injury to body or health" in the universe of grave breaches.²⁹⁸ Although this only applies to "protected persons" under the convention, i.e., those who are "in the hands of a Party to the conflict or Occupying Party of which they are not nationals,"²⁹⁹ there are certainly many situations involving environmental damage which could have these results. The acts do have to be willful, an intent requirement which appears to exclude purely collateral injuries.³⁰⁰

Have the relevant Geneva Convention IV principles become recognized as customary international law in the fashion of their Hague counterparts? While there is no international judicial decision on point, the extensive dissemination of the principles through teaching,

²⁹⁶*Id.* art. 146.

²⁹⁷DOD Report, *supra* note 63, at O-22.

²⁹⁸ Geneva Convention IV, *supra* note 8, art. 147.

²⁹⁹*Id.* art. 4.

³⁰⁰This is the position taken by Pictet, *supra* note 253, at 597.

scholarship and publication in law of war manuals would suggest they have. Indeed, no law of war class or military manual would be complete without discussion of Geneva IV. All significant players in the international arena are parties and state practice evidences a consensus that the norms expressed are obligatory. The fact that it exists as a treaty does not preclude it from evolving over time into customary law, despite concerns expressed by some.³⁰¹ This being the case, the normative Geneva prescriptions discussed above are almost certainly binding on parties and non-parties alike.³⁰²

c. Protocol I

In 1965 the 20th Conference of the Red Cross directed the ICRC to begin work on proposals for updating the law of war. This was in great part a response to an emerging belief that the nature of warfare had begun to experience a qualitative transformation that merited revision of the prescriptive norms governing its conduct. Accordingly, the ICRC convened the Diplomatic Conference on the Reaffirmation and Development of International Humanitarian Law

³⁰¹ The reasoning of those expressing concern is as follows:

The large number of nations which accept the Geneva Conventions, rather than evidencing a development of well-accepted custom, may actually obscure the degree to which the treaties have become customary law. As parties to the treaties, nations may simply be following their conventional obligations rather than forging new customary practices. Because of this possibility, the Geneva Conventions paradoxically may remain conventional law rather than having evolved into customary law. Presumably, customs cannot develop when widely subscribed to conventions already exist.

Mark J. Caggiano, *The Legitimacy of Environmental Destruction in Modern Warfare: Customary Substance Over Conventional Form*, 20 B.C. Envtl. Aff. L. Rev. 479, 493 (1993). However, recall that the International Military Tribunal found Hague IV to be customary law even though by its own terms (art. 2) it was limited in application to parties. I doubt whether there is an inverse relationship between accession to a treaty and the customary character of its provisions. See also, Thomas Meron, *The Geneva Conventions as Customary Law*, 81 Am. J. Int'l L. 348 (1987).

³⁰² "Nothing...precludes a rule set forth in a treaty from becoming binding upon a third State as a customary rule of international law, recognized as such." Vienna Convention, *supra* note 183, art. 38. See also *North Sea Continental Shelf Cases* (F.R.G. v. Den.)(F.R.G. v. Neth.) 1969 I.C.J. 4.

Applicable in Armed Conflicts. The Conference, which met over four sessions between 1974 and 1977, was attended by representatives of well over 100 nations and 50 non-governmental organizations. Additionally, 11 national liberation movements sent observers. In 1977 this conference adopted two "Protocols Additional" to the Geneva Conventions of 1949. Protocol I was addressed to international armed conflict. It is a particularly interesting product in that it combines elements of both Hague and Geneva law. The other, Protocol II, was designed to protect victims of non-international armed conflict; it will not be discussed.

The United States signed the protocols in 1978. Some six years later the Joint Chiefs of Staff were directed to develop a final position on ratification. Their conclusions, which were concurred in by the Office of the Secretary of Defense and the Department of State, recommended against ratification of Protocol I. President Reagan accepted that advice, calling the protocol "fundamentally and irreconcilably flawed,"³⁰³ a position which is under review by officials of the current Administration. Despite its rejection of the treaty *per se*, the U.S. does acknowledge that much of the Protocol I is customary law and, therefore, binding on our armed forces.³⁰⁴ This position has important implications for applicability of the treaty. For example, if the position is accurate, the customary provisions applied in the Gulf War even though at the time the U.S., France, United Kingdom and Iraq were non-parties.³⁰⁵

³⁰³Letter of Transmittal from President Ronald Reagan, Protocol II Additional to the 1949 Geneva Conventions and Relating to the Protection of Victims of Non-International Armed Conflicts, S. Treaty Doc. No. 2, 100th Cong., 1st Sess. III (1987), reprinted in *Agora: The U.S. Decision Not to Ratify Protocol I to the Geneva Conventions on the Protection of War Victims*, 81 Am. J. Int'l L. 910 (1987).

³⁰⁴For a summary of Protocol I and the U.S. position on key articles, see International and Operations Law Division, Office of The Judge Advocate General, Department of the Air Force, Operations Law Deskbook, tab 12 (n.d.) [hereinafter Deployment Deskbook].

³⁰⁵The interesting question is whether all the parties can agree on which provisions are customary and which are not. For an analysis of the Protocol as customary law in the Gulf War, see Christopher Greenwood, *Customary International Law and the First Geneva Protocol of 1977 in the Gulf Conflict*, in *The Gulf War 1990-91 in International and English Law* (Peter Rowe ed. 1993).

One important limitation of the protocol is that its articles regarding protection of the civilian population and civilian objects (arts. 48-67) are not generally applicable to naval warfare or aerial combat.³⁰⁶ The exclusion was a conscious effort by the delegates of the Diplomatic Conference to secure agreement where it was most likely to come -- in the "well-established" body of law governing land warfare. Their concern was that the nature of naval warfare had fundamentally changed, thereby becoming unsettled, during the Second World War and in the years thereafter. In particular, differences of opinion over the state of the law governing issues such as visit and search, the legality of attacks on merchant vessels and submarine warfare were felt likely to impede the process of updating the existing Geneva Conventions.³⁰⁷ Similarly, the laws of aerial warfare are not formally codified and that customary law which addresses the topic is ambiguous. Therefore, the delegates decided to make Protocol I inapplicable at sea or in the air *unless* the attack in question targeted land objectives.³⁰⁸ It has been suggested that one additional exception is the extension of applicability to attacks from the sea or air against targets in the territorial sea.³⁰⁹ This reasonable approach is based on the protocol's use of "territory" and "national territory," terms which in their legal context include the territorial sea.

³⁰⁶"The provisions of this Section (Civilian Population) apply to any land, air, or sea warfare which may affect the civilian population, individual civilians or civilian objects on land. They further apply to all attacks from the sea or from the air against objectives on land but do not otherwise affect the rules of international law applicable in armed conflict at sea or in the air." Protocol I, *supra* note 8, art. 49(3).

³⁰⁷*See Sandoz, supra* note 15, at 606; Michael Bothe et al., *New Rules for Victims of Armed Conflicts* 290 (1982). The latter commentary notes that this approach was ICRC proposed having the support of the states with the largest navies. These parties believed it would be counter-productive to pursue revision of the law of naval warfare at the time. This was particularly so because the preparatory work of the experts had not focused on the subject. *Id. citing* Official Records of the Diplomatic Conference on the Reaffirmation and Development of International Humanitarian Law Applicable in Armed Conflict (CDDH) [hereinafter O.R.], XV CDDH/50/Rev. 1, at 236; XIV CDDH/III/SR.3, at 21-22.

³⁰⁸Protocol I, *supra* note 8, art. 49(3).

³⁰⁹Walker, *supra* note 47, at 122.

What is interesting is that this restriction affects all of the significant provisions relevant to the environment *except* Article 35(3). This is so due to the placement of Article 35(3) in an earlier section on methods and means of warfare. As a result, the scope of 35(3) will be broader than that of its counterpart, Article 55, even though their text is nearly identical. Considered in light of the fact, discussed *infra*, that the former adopts an intrinsic value approach, whereas the latter is anthropocentric in nature, this is especially significant.

Many of the Protocol I provisions which bear on issues of warfare and the environment are simply further codification of elements of the law of war that have already been addressed. For instance, Article 35(1) notes that the right of the parties to choose methods or means of warfare is not unlimited,³¹⁰ Article 35(2) expresses the customary unnecessary suffering prohibition,³¹¹ Article 51 proscribes indiscriminate attacks,³¹² and both Articles 51³¹³ and 57³¹⁴

³¹⁰ "In any armed conflict, the right of the Parties to the conflict to choose methods or means of warfare is not unlimited." Protocol I, *supra* note 8, art. 35(1).

³¹¹ "It is prohibited to employ weapons, projectiles and materials and methods or means of warfare of a nature to cause superfluous injury or unnecessary suffering." *Id.* art. 35(2).

³¹² *Id.* art. 51(4).

Indiscriminate attacks are prohibited. Indiscriminate attacks are:

- (a) those which are not directed at a specific military objective;
- (b) those which employ a method or mean of combat which cannot be directed at a specific military objective; or
- (c) those which employ a method or means of combat which cannot be limited as required by this Protocol;

and consequently, in each case, are of a nature to strike military objectives without distinction.

³¹³ "Among others, the following types of attacks are to be considered as indiscriminate:

...

(b) an attack which may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated." *Id.* art. 51(5)(b).

³¹⁴ "(A)n attack shall be canceled or suspended if it becomes apparent that the objective is not a military one or is subject to special protection or that the attack may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated...." *Id.* art. 57(2)(b).

mandate proportionality analysis. General concepts relevant to the environment are implicit in several others. The requirement to distinguish civilian from military objects in Articles 48 and 52, e.g., is a basic step in both military necessity/proportionality analysis and in assessing discrimination (humanity) requirements.³¹⁵ Of course, the Martens clause of Article 1 provides protection even beyond the specific safeguards enunciated in the protocol.³¹⁶

However, Protocol I stretches the envelope of environmental protection much further than any of its predecessors. Under Article 54(2),

...(i)t is prohibited to attack, destroy, remove or render useless objects indispensable to the survival of the civilian population, such as foodstuffs, agricultural areas for the production of foodstuffs, crops, livestock, drinking water installations and supplies and irrigation works, for the specific purpose of denying them for their sustenance value to the civilian population or to the adverse Party, whatever the motive, whether in order to starve out civilians, to cause them to move away, or for any other motive.³¹⁷

As the provision's examples illustrate, in many cases it is the environment itself which provides the objects necessary for survival. It must also be noted that the list is not exhaustive. Other items such as fuel oil, electricity or lines of communication could, depending on circumstances, also merit protection, as long as the purpose of the attack on them relates to denial of sustenance. Their destruction [absent the 54(2) safeguards] could certainly have environmental

³¹⁵ "In order to ensure respect for and protection of the civilian population and civilian objects, the Parties to the conflict shall at all times distinguish between the civilian population and combatants and between civilian objects and military objectives and accordingly shall direct their operations only against military objectives." *Id.* art. 48.

"Attacks shall be limited strictly to military objectives. In so far as objects are concerned, military objectives are limited to those objects which by their nature, location, purpose or use make an effective contribution to military action and whose total or partial destruction, capture or neutralization, in the circumstances ruling at the time, offers a definite military advantage." *Id.* art. 52(2).

³¹⁶ "In cases not covered by this Protocol or by other international agreements, civilians and combatants remain under the protection and authority of the principles of international law derived from established custom, from the principles of humanity and from the dictates of public conscience." *Id.* art. 1(2).

³¹⁷ *Id.* art. 54(2)

consequences. Under subparagraph (2), protected objects are immune from targeting even if the goal of denying them for their sustenance value is to secure a military advantage. This is so regardless of whether the intent to deny sustenance value is as to the civilian population *or* the “adverse Party,” i.e., enemy forces. The only exceptions occur when the protected objects are: 1) used *solely* for the armed forces; 2) not used as sustenance and destruction will not deprive the civilian population of food or water; or 3) required in the defense of, and executed on, one’s own territory.³¹⁸ This essentially outlaws the scorched earth tactics used during the Second World War with such tragic consequences to both humans and their environment. Of particular importance is the fact that military necessity has been completely removed from the equation, although the requirement of intent to deny sustenance will limit the reach of 54(2) somewhat. Finally, the article would preclude *use* of the environment as a weapon if the prohibited effect might result.³¹⁹

While Article 54(2) has not proven controversial, another with significant environmental consequences, Article 56, has. It prohibits attacking dams, dikes and nuclear electrical power generating stations if release of “dangerous forces and consequent severe losses among the civilian population” might result.³²⁰ This clearly anthropocentric prohibition applies even where the facility is a valid military objective. It also includes attacks on any surrounding military objective that might result in release of the dangerous forces. For dams and dikes, the protection

³¹⁸ *Id.* art. 54(3) & (5). Interestingly, Anthony Leibler has suggested that since the provision is limited to destruction intended to deny civilians of sustenance, and other actions are not treated as prohibited, “at least from the perspective of environmental protection, Article 54 is of negligible utility.” Leibler, *supra* note 175, at 107. This characterization underestimates the utility of the prohibition. Assuming it is complied with, it may limit efforts to foment unrest among a population, destroy sustenance available to an advancing force that lives largely off the land, or even foul desalination plants which both civilians and the military rely on.

³¹⁹ For instance, weather or climate could severely affect food production.

³²⁰ Protocol I, *supra* note 8, art. 56(1).

is forfeited if they are used for other than their normal functions “in regular, significant and direct support of military operations and such attack is the only feasible way to terminate such support.”³²¹ As to nuclear electrical generating stations, attack is permissible only when the facility provides power “in regular, significant and direct support of military operations” *and* the only way to cut off that support is through attack.³²² Parties are permitted to arm the facilities, though any armament is limited to defensive use and cannot exceed that necessary to repel hostile action.³²³

Assertions have been made that the article, if given a liberal interpretation, would extend protection to any facility containing “dangerous forces,” in particular oil wells or tanks. They are unconvincing. The very issue of whether the list provided should be exhaustive or illustrative surfaced during the drafting process. It was decided that in order to permit specificity regarding those actions the drafters were most concerned about (dams, dikes, nuclear power facilities), the list would be exhaustive.³²⁴

Despite limitation in scope, the degree of protection is consequential. First, though the term “severe” appears to mandate a high degree of loss before protections come into effect, that is not the case, for in the official ICRC Commentary the term is clarified as meaning “important”

³²¹*Id.* art. 56(2)(a).

³²²*Id.* art. 56(2)(b).

³²³*Id.* art. 56(5).

³²⁴The Greenpeace Study stated that “(i)t is unclear whether oil wells constitute installations containing dangerous forces. The examples given in Protocol I...are not meant to be exhaustive, and a liberal construction could say that the release of the forces of the oil fires and spills are covered.” Greenpeace Study, *supra* note 63, at 140. However, the report of committee proceedings during drafting makes it clear that the list was intended to be exhaustive. See O.R., *supra* note 307, XV CDDH/215/Rev.1, *supra* note 307, at para. 326. See also Bothe, *supra* note 307, at 352.

or “heavy.”³²⁵ Conceptually, perhaps it is easier to think of the provision as excluding losses that are “unimportant” or “light.” Assuming this is a fair characterization rather than merely semantic gymnastics, the quantum of damage necessary to activate Article 56 would not be difficult to reach. Furthermore, attack need not even be certain to result in a release; instead, the criterion is “may cause.” Whether an attack *may* result in a release is a very much less subjective determination than whether it *will* do so.

The robustness of the protection is also apparent in the hurdles to be overcome before attack is permitted. Dams and dikes must be used for other than their intended purposes *and* their support of the enemy effort must be regular, significant and direct *and* attacking them must be the only option. Nuclear generating stations enjoy similar safeguards, though they need not be used for other than their normal function.³²⁶ Notice that virtually all the criteria are stated in the conjunctive. Therefore, even when support is direct and substantial and attack is the only option, if the support is irregular the facility enjoys immunity. The requirement to eliminate feasible alternatives further complicates matters. Once it is determined that there is no other choice, must the weapon which best avoids damage be selected? Normally, within reason, the law of armed conflict does not dictate the use of specific tactics, e.g., the use of smart weapons. However, given the heightened protection afforded to these facilities, as well as the requirement to select alternative courses, it would make sense that weapons choice criteria would apply. That this is so

³²⁵ Sandoz, *supra* note 15, at 669. The Commentary note, “(a)s so often in this Chapter, this concept is a matter of common sense and it must be applied in good faith on the basis of objective elements such as proximity of inhabited areas, the density of population, the lie of the land, etc.” *Id.* at 669-70.

³²⁶ The issue of targeting nuclear facilities was raised at the 1990 Review Conference for the Nuclear Non-Proliferation Treaty. The Hungarian and Dutch delegates, with support from several other delegations, suggested an international agreement to address the topic. The U.S. Delegation did not respond to the proposal. David Fischer and Harald Müller, *The Fourth Review of the Non-Proliferation Treaty*, 1991 Stockholm International Peace Research Institute Y.B. 555, 566.

was suggested by comments the Rapporteur made suggesting that the capabilities of modern weapons heightened the protection afforded under the provision.³²⁷

Other indications of stringency are found in the intent underlying the relevant verbiage, intent which may suggest, as was the case with “severe,” a meaning which differs from common usage. Resort to the ICRC Commentary again illustrates the extent of the protection afforded. It offers two examples, a dike forming *part of a system of fortifications* and a road across a dam which can be used as an *essential route for the movement of armed forces*. Even in these circumstances, the regular, significant and direct criteria apply, thereby indicating that there are times when they might *not* be met.³²⁸ It then goes on to dismiss criticisms of the standard’s apparent subjectivity by noting that the “terms merely express common sense, i.e., their meaning is fairly clear to everyone;” therefore, they simply “need to be interpreted in good faith on the basis of objective elements.”³²⁹

At this point, it might seem a daunting task to identify examples of support for military operations which would allow exclusion from the broader protection. In fact, it may be easier than seems at first glance. Lest those who apply the standard not possess the perceptive abilities to discern what is “fairly clear to everyone,” the commentary defines the terms, using the technique of semantic inversion employed above to illustrate “severe.” “Regular” implies a time standard and is said not to be “accidental or sporadic.” “Significant,” according to the commentary, is less precise than regular, but implies support that is more than “negligible” or “merely an incidental circumstance.” “Direct” means “not in an intermediate or roundabout

³²⁷ O.R., *supra* note 307, at XV CDDH/215/Rev.1, at 282.

³²⁸ Sandoz, *supra* note 15, at 671.

³²⁹ *Id.*

way.”³³⁰ These definitions appear to actually set a *lower* standard of protection than would reference to common American usage of the terms.

As is clear, then, Article 56 represents a balance. While it sets the protection at a high level, it is not prohibitively difficult to reach the exclusionary threshold. That this is so is illustrated by the commentary’s example of electrical generation. It notes that to allow for the pooling of capacity, electricity is often provided to both civilian and military users through an integrated grid. Given this intertwined relationship, “(i)t would not be unreasonable to claim that merely supplying electricity constitutes direct support of military operations.”³³¹ Of course, providing electricity would certainly be regular (not sporadic), and, in light of current methods of combat, significant (not negligible).³³² Balance is also suggested by limitation of the nuclear facilities prohibition to those generating electricity. This avoids any *per se* restriction on the much more attractive targets associated with nuclear weapons production.

The United States opposes Article 56 as excessively restrictive, pointing to the protections already provided the civilian population by the principle of proportionality. From the U.S. perspective, setting the threshold for attack so high invites the enemy to use protected facilities for military purposes. If the attacker decides the criteria are not met, he will refrain from attack. On the other hand, if he decides the criteria have been met, he opens himself up to condemnation by those who would disagree with his assessment. Given the multiplicity of criteria and their inherent subjectivity, it will be very difficult to cite an action which would be objectively

³³⁰*Id.*

³³¹*Id.* at 672.

³³²The Commentary does hasten to add, though, that alternatives to attacking a nuclear generating station itself exist in an effort aimed at cutting the flow of electricity. *Id.* This is an important point given the requirement that there not be alternatives to attack on the protected facilities.

permissible. Finally, critics argue that the protection for nuclear electrical power generation facilities ignores the existence of integrated power grids, an inaccurate point given the ICRC Commentary cited above.³³³

Advocates of the prohibition would reply by pointing to the requirement that the resultant losses among the civilian population be "severe."³³⁴ Therefore, only attacks with dramatic consequences are forbidden. Furthermore, since severity of loss is a prerequisite to protection, in most cases simple proportionality analysis will preclude attacks which the article's opponents might complain of being prohibited from conducting. It is hard to imagine an attack with severe civilian losses that would be proportional if the contribution made to the enemy's military effort was not regular, significant and direct. From this perspective, Article 56 essentially operates to resolve gray area situations in favor of the civilian population.

There is little doubt that adherence to Article 56 would heighten protection of the environment during warfare. Though proportionality analysis would provide similar levels of protection in most cases, Article 56's greater specificity serves as a restraint on self-serving interpretations of proportionality by the malevolent. This does not answer the question of whether Protocol I is worthy of ratification, or even whether Article 56 is an overall step forward in the law of war. Yet, because it is less susceptible to avoidance through interpretation, *from an environmental perspective* it does represent progress.

As a final aside, it bears mentioning that U.S. aircraft attacked nuclear facilities during the Gulf War. However, Article 56 was not applicable because the United States was not a Protocol

³³³Operations Law Deployment Deskbook, *supra* note 304, at tab 12, para. 1.8.7.1.

³³⁴The Virginia Journal of International Law article by Ambassador Aldrich, who negotiated Protocol I for the U.S., provides the core analysis supporting ratification. *See generally*, Aldrich, *supra* note 45.

I party and it would be difficult to make a case that the provision represented customary international law. Further, the targets were not nuclear electrical generating stations. Some may argue about whether the attacks “may” have resulted in a release, or even whether the U.S. took all “practical precautions” to avoid causing one, but ultimately Protocol I was not implicated by the missions.³³⁵

Like Geneva Convention IV, Protocol I provides for grave breaches. Neither of the environmental provisions to be discussed in greater detail below, Articles 35(3) or 55, are included in the category. Nevertheless, causation of environmental damage could, under specific circumstances, result in a grave breach (war crime) if the act in question is willful and death or serious bodily injury result. These include making the civilian population the object of attack, launching an indiscriminate attack against civilians or civilian objects, and striking works or installations containing dangerous forces knowing that the harm caused will be excessive.³³⁶ In such cases, damage to the environment may be collateral *or* the environment might be attacked for the purpose of causing the requisite result. As war crimes constituting grave breaches, such acts would require the state in which the offender is found to prosecute him or cooperate in his extradition.³³⁷ The mere fact that an offense is not a grave breach, however, does not preclude prosecution; it only means that the heightened enforcement regime set forth for them does not apply.

³³⁵On this issue, see Jozef Goldblat, *Legal Protection of the Environment Against the Effects of Military Activities*, 22 Bull. Peace Proposals 399, 400 (1991). Professor Goldblat takes a fairly critical approach to the topic, pointing to, in particular, the 1981 bombing of the Iraqi nuclear reactor by the Israelis.

³³⁶Protocol I, *supra* note 8, art. 85(3)(a)-(c).

³³⁷*Id.* art. 88.

2. Key Environment Specific Provisions

a. Protocol I

Thus far, the prescriptions cited protect the environment “indirectly,” either through anthropocentrically based protections or by extension of traditional concepts designed for other than environmental protection. Protocol I was the first instrument intended exclusively for armed conflict to provide direct environmental protection. The idea of doing so initially surfaced at the Conference of Government Experts in 1972.³³⁸ This ICRC sponsored body was tasked with laying the groundwork for the effort to update the law of armed conflict. Interestingly, despite a suggestion that the environment *per se* be granted protection, the preliminary ICRC draft did not contain any provisions expressly addressing the topic.³³⁹ After several of the delegations pressed the issue, an informal working group (“Biotope”) was established within Conference Committee III to consider proposals for environmental provisions.³⁴⁰ Two types of articles were recommended. In the first category were those which tended to treat the environment anthropocentrically, i.e., as meriting protection because environmental damage can lead to human suffering.³⁴¹ Efforts in this direction led to adoption of Article 55.³⁴² On the other hand, there were those who, recalling the environmental destruction of the Vietnam War, urged adoption of a

³³⁸ The relevant proposals read: “It is forbidden to use weapons, projectiles or other means and methods which upset the balance of the natural living and environmental conditions” or “means and methods which destroy the natural human environment.” Report on the Work of the Conference of Government Experts on the Reaffirmation and Development of International Humanitarian Law Applicable in Armed Conflicts, 2d Sess., II CE/COM III/C5, annexes, at 52.

³³⁹ Sandoz, *supra* note 15, at 662-63.

³⁴⁰ Participating countries included Australia, Czechoslovakia, Finland, the German Democratic Republic, Hungary, Ireland, the Netherlands, Spain, Sweden and Yugoslavia.

³⁴¹ O.R., *supra* note 307, III CDDH/III/60, at 220.

³⁴² *Id.* XIV CDDH/SR.38, at 404.

standard unqualified by the human factor -- an intrinsic value approach.³⁴³ This previewed adoption of the Article 35(3) restriction on means and methods of warfare that damage the environment.³⁴⁴

Articles 35(3) and 55 represented the furthest steps forward towards safeguarding the environment in any international law instrument. The two provisions are complementary in that while the former is basically a Hague law variant (limits on methods and means of warfare), the latter is a Geneva law protection (protection of civilians and civilian objects). To foster this relationship, they employ analogous standards. Recall the text.

Article 35(3): It is prohibited to employ methods or means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment.

Article 55: (1) Care shall be taken in warfare to protect the natural environment against widespread, long-term and severe damage. This protection includes a prohibition of the use of methods or means of warfare which are intended or may be expected to cause such damage to the natural environment and thereby prejudice the health or survival of the population.

(2) Attacks against the natural environment by way of reprisals are forbidden.

As mentioned earlier, inclusion of both was in part an effort to be equally responsive to the anthropocentric and intrinsic value camps.³⁴⁵ Note the absence in 35(3) of any connection to, or balancing with, human values. This is of particular interest because it is an “intrinsic value plus” standard. Basic intrinsic valuation requires assessing worth beyond the human component; it does

³⁴³*Id.* CDDH/III/64, at 221. Despite the intrinsic value approach contained therein, a cynic might suggest that the proposal was, at least in part, animated by political content. It was suggested by the three socialist countries of Biotope. This politicization probably contributed to the decision to appease both camps by inclusion of articles reflecting the two approaches.

³⁴⁴O.R., *supra* note 307, XIV CDDH/III/SR 38, at 405-06.

³⁴⁵*Id.* at XV CDDH/III/275, at 359. Inclusion of both raised a few hackles. The United Kingdom, for example, went on record as disapproving inclusion of Article 35(3) in this section, noting that it would interpret it as but a repetition of Article 55. Of particular importance is the fact that the U.K. stated it viewed the provisions as protection of the environment in order to protect civilians living in it. *Id.* at VI CDDH/SR.39, Annex, at 118.

not preclude subsequent balancing against human values once the weighing process is complete. Article 35(3), however, operates entirely independent of human variables. Thus, it goes far indeed. By contrast, 55(1) focuses on the damage's "prejudice (to) the health or survival of the population," a classically anthropocentric formulation.³⁴⁶

The express Biotope rationale for retaining the two approaches is that whereas Article 55 provides for protection of the civilian population, 35(3) is an unnecessary suffering standard.³⁴⁷ That may explain the methods/means versus civilian population distinction, but it does not explain the absence of reference to either humans or balancing. In fact, the ICRC commentary on the issue is fairly clear-cut. It states that Article 35(3) "is a matter not only of protecting the natural environment against the use of weapons or techniques deliberately directed against it, nor merely of protecting the population and the combatants of the countries at war against any of these effects, but also one of protecting the natural environment itself...."³⁴⁸ If 35(3) is about unnecessary suffering, then that suffering would extend beyond humans to the "suffering" of the environment.

Most opposition to the provisions has centered on the definition of "widespread, long-term and severe." Use of the conjunctive "and" is particularly problematic, for so interpreted the articles mandate a three part test which is nearly impossible to exceed except in the most

³⁴⁶For purposes of clarity, it should be noted that Article 55 falls under Part IV, Chapter III, entitled "Civilian Objects." Therefore, it does not provide protection to military objectives. By contrast, there is no such structural limitation with regard to Article 35(3). Additionally, note that Article 55 refers to the "population" without use of the adjective "civilian." The official record makes clear that this was intentional, that the goal was to extend the protection to the whole population since the damage was to be long-term. O.R., *supra* note 307, XV CDDH/III/275, at 360. Finally, "health" is used in the provision to provide protection beyond that needed for bare survival. Effects that would pose a serious blow to health, such as congenital defects, degeneration's or deformities would, therefore, be encompassed within the meaning of the provision. *Id.* XV CDDH/215/Rev. 1, at 281.

³⁴⁷ *Id.* CDDH/III/GT/35, at 3

³⁴⁸ Sandoz, *supra* note 15, at 410.

egregious cases. Unfortunately, there is very little indication in the negotiating history of what the delegates intended by the phrase. Some referred to “long-term” as a period measured in decades.³⁴⁹ In fact, other than passing mention that the battlefield damage in France during the First World War was not of the type contemplated,³⁵⁰ little emanated from the conferences to clarify matters.³⁵¹ This lack of clarity is one basis for U.S. objections, as well as those of other states.³⁵²

Attempts have been made to remedy the flaw, though they have not been international in scope. For instance, the German law of war manual defines the quantum of damage necessary as “a major interference with human life or natural resources which considerably exceeds the battlefield damage to be regularly expected in a war.”³⁵³ Surprisingly, some of the best guidance has come from the military of the key state which has not ratified Protocol I, the United States. In its Operational Law Handbook, the Army Judge Advocate General School asserts that *long-standing* should be understood as decades, *widespread* “probably means several hundred square kilometers...(and) *severe* can be explained by Article 55’s reference to any act that ‘prejudices the health or survival of the population.’”³⁵⁴ The “widespread” definition is taken from that employed in ENMOD. This is an interesting approach given the fact that an Understanding was appended

³⁴⁹ O.R., *supra* note 307, XV CDDH/215/Rev. 1, at 268.

³⁵⁰ *Id.*

³⁵¹ According to the ICRC Commentary, “(i)t appeared to be a widely shared assumption that battlefield damage incidental to conventional warfare would not normally be proscribed by this provision.” Sandoz, *supra* note 15, at 417 citing the Rapporteur’s Report, O.R., *supra* note 307, XV CDDH/215/Rev. 1, at 259.

³⁵² See Documents on the Law of War 462-68 (Adam Roberts & Richard Guelff eds., 2d ed. 1989), for the reservations to the Protocol.

³⁵³ German Manual, *supra* note 156, at 403. Note, though, that this definition complements a provision in the manual which was developed from *both* Protocol I and ENMOD.

³⁵⁴ Operational Law Handbook, *supra* note 168, at 5-8. According to the Handbook, most of the damage which occurred during WW II would not have met this threshold. *Id.*

to ENMOD disclaiming any intention for its definitions to apply to other instruments, an unstated but obvious reference to Protocol I. More important from the perspective of the overall development of the environmental law of war is the Army's reference to human "health and survival." To use this standard in setting an *Article 35(3)* threshold is to come down firmly in the anthropocentric camp, thereby neglecting the drafters' rationale for including two distinct environmental provisions.

Articles 35(3) and 55 present other interpretive challenges. Some commentators are concerned that the "may be expected" language creates a subjective "should have known" standard which will be used to judge commanders.³⁵⁵ If that is so, they argue, war crimes charges could be based on incidental environmental damage caused in the course of otherwise valid military operations.³⁵⁶ These concerns are overstated. The "expected" verbiage is obviously designed to preclude any argument that since collateral damage is not "intended," it is not encompassed in the prohibition. Isn't that as it should be? A prohibition on (excess) collateral damage is hardly novel in the law of war. More to the point, the commentators are entirely accurate -- commanders could be made subject to a "should have known standard." But that is a standard of criminal responsibility imposed in the domestic law of many states. Under the Uniform Code of Military Justice, e.g., commanders are already criminally responsible for operational

³⁵⁵ In fact, that appears to have been the intent. The ICRC Commentary explains that the English text originally read "calculated to cause," whereas the French text used the phrase "de nature à." The English iteration suggested that the mental state required was one of intent or deliberation, whereas the French was more restrictive. Therefore, the Conference discarded the "calculated to cause" phraseology, replacing it with "intended, or may be expected." Sandoz, *supra* note 15, at 418.

³⁵⁶ Guy Roberts, *supra* note 45, at 146-148. He argues that the "standards set forth in articles 35(3) and 55 are too ambiguous and subject to diverging interpretation to be workable. They could conceivably make military commanders and political leaders subject to prosecution for committing war crimes if they 'should have known' their actions would result in proscribed damage to the environment." *Id.* at 148. This assertion confuses possibly valid criticism of substantive legal standards with issues of *mens rea*.

consequences they *should have* known about.³⁵⁷ Lack of actual knowledge is a fact in mitigation, not a defense based on the absence of an element of the offense.

What should be of far greater concern to the operational commander than definitional legerdemain or questionable *scienter* standards is the fact that the provisions are devoid of reference to military necessity or proportionality. Any action taken by a commander which reaches the long-term, widespread and severe threshold will violate the prescriptions even if it is militarily necessary and clearly proportional. No balancing occurs beyond this point. Especially troubling is the possibility that there may be *human* values, military advantages aside, which outweigh the environmental protection being afforded.³⁵⁸

Imagine, for instance, a large population center at risk of falling to enemy forces operating from forested terrain surrounding it. The forest effectively serves as a sanctuary for the attackers. To complicate matters, prior instances of occupation by the enemy have revealed a callous, wanton occupier with little regard for the civilian population. The only option available to the commander charged with defense of the city is destruction of the forest surrounding the city, but the sole method available to do so quickly will result in long-term, widespread and severe destruction of the forest's flora and fauna. On the other hand, denial of sanctuary will force the enemy to withdraw. Under Article 35(3), the commander would seemingly be precluded from taking the action despite the potential for tragic human suffering should the enemy occupy the

³⁵⁷ For instance, dereliction of duty may be charged using this standard. The Code provides that "(a)ctual knowledge need not be shown if the individual reasonably should have known of the duties." Uniform Code of Military Justice, art. 92, in Manual for Courts-Martial, United States (1995) at part IV, sec. 16c(3)(b).

³⁵⁸ The issue is not an "either-or" proposition, it is a question of balance. Even intrinsic value advocates would agree environmental values can be outweighed by human ones. The precise balance depends on the circumstances.

city. Yet, absent 35(3), the commander's proposed course of action would clearly meet the requirements of military necessity and proportionality.

That is one side of the coin, i.e., whether the articles raise the standard of protection too high by excluding important considerations that safeguard human values from the process. On the other side is a second debate about whether or not the standards of protection are lowered by the articles. Professor Wil Verwey has argued that they very well *might* be. He does so by pointing to the general principle of law that *lex specialis* applies over *lex generalis*. If so, an action that does not cause widespread, long-term or severe damage would not be prohibited because it is otherwise disproportionate or causes unnecessary suffering.³⁵⁹ The better view, however, is that neither provision has such an effect. First, the *specialis - generalis* principle applies in situations where norms appear to conflict. It is a principle of resolution. Here it can be argued that proportionality and unnecessary suffering are complemented by the protocol provisions and vice versa; at core they are each designed to further humanitarian concerns.³⁶⁰ Much more importantly, inclusion of environment specific prescriptions was not intended to forego protection already in place. Nor did the Diplomatic Conference use 35(3) and 55 to merely clarify existing norms, a fact illustrated by the differing perspectives reflected in the two. Instead, the purpose was obvious -- to enhance protection of the environment. Arguments to the contrary ignore the historical, political and social milieu from which Protocol I emerged, as well as the principle of international law that treaties are to be interpreted in accordance with their context, object and purpose.³⁶¹

³⁵⁹ Verwey, NWC Symposium Paper, *supra* note 12, at 2.

³⁶⁰ Bear in mind the fact that proportionality and unnecessary suffering are principles of law, not war.

³⁶¹ "A treaty shall be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in light of its object and purpose." Vienna Convention, *supra* note 183, art. 31(1).

Another interpretive challenge is determining what to make of the “care shall be taken” language in the first sentence of Article 55. No such exhortation appears in Article 35(3). Though reference to “taking care” might at first glance appear to set a low standard, Article 55 continues by *prohibiting* methods or means which would result in the requisite damage. Thus, the phrase is actually a hortatory provision which encourages greater protection of the environment than the minimum standard set forth in the next sentence. This makes particular sense in the context of an anthropocentrically based article; one should always strive to improve protection of man from the dangers of war. Perhaps, then, the provision is intended to address situations involving methods or means not designed to damage the environment.³⁶² By this interpretation, the care standard is a collateral damage provision. The alternative is that it is simply hortatory, and merits no formal prescriptive valance beyond that.³⁶³

In a sense, these articles, particularly 35(3), are analogous to the “just don’t do that” prohibitions discussed in conjunction with the humanity principle. Here we see the flip side of the benefits provided by such prohibitions. While they may obviate the necessity of engaging in complex balancing analysis, in certain unique circumstances they may also operate to by-pass human values that could be fostered by the prohibited actions. Of course, any appraisal of the prescriptions must be cost-benefit based. Do the clear benefits offered by environment specific provisions outweigh the costs generated in the unlikely event that actions forbidden by Protocol I foster human values? The answer depends, as it did with the customary international law

³⁶² This position is taken in Bothe, *supra* note 307, at 345-46.

³⁶³ Professor Verwey’s has observed that the ICRC has never claimed that the care standard of the first sentence was intended to extend the level of protection. Verwey, NWC Symposium Paper, *supra* note 12, at 3.

balancing tests, on one's relative assessment of human and environmental values. This returns us to the anthropocentric versus intrinsic value debate.

When searching for the meaning of the prescriptions, a distracting twist is the assertion that the use of nuclear weapons might be prohibited by the protocol. After all, while no weapon is more destructive, many strategists have argued that its very destructiveness is what provides the greatest protection to human values, a protection which takes the form of deterrence. Concerns have been expressed that if Protocol I was held applicable to nuclear weapons, "the careful balance fashioned with other nuclear powers in existing agreements affecting those weapons could be adversely affected."³⁶⁴ However, although the legality of nuclear weapons is a valid topic for discussion in international law circles, the applicability of 35(3) and 55 is not. From the very beginning, it was clear that the protocol provisions were not meant to reach nuclear weapons. When the ICRC first provided draft protocols to the Diplomatic Conference for consideration, it specifically noted that they were not intended to encompass atomic, chemical or bacteriological weapons because those weapons were already the subject of other international instruments. Later, the United States, France and Great Britain, among other states, reiterated the exclusion of nuclear weapons from the reach of the protocol provisions. In fact, the only country which did appear to adopt the position that nuclear weapons were covered was India.³⁶⁵

After all is said and done, how much protection do Protocol I's environmental provisions actually provide? The answer remains clouded, but the best estimate is that it is measurable. For

³⁶⁴Terry, *supra* note 84, at 64 - 65.

³⁶⁵For discussions of this issue, see Operations Law Deployment Deskbook, *supra* note 304, tab 12, para 1.7.1.4; Aldrich, *supra* note 45, at 718-719; Frits Kalshoven, *Reaffirmation and Development of International Humanitarian Law Applicable in Armed Conflicts: The Diplomatic Conference, Geneva, 1974-1977*, 9 Neth. Y.B. Int'l L. 107, 108-09 (1978).

instance, even in advance of the Gulf War, the ICRC Commentary noted that “(t)here is no doubt that Article 55 will apply to the destruction of oil rigs resulting in oil gushing into the sea and leading to extensive damage such as that described in that article.”³⁶⁶ With impressive foresight, it also addressed the tactic of setting oil facilities ablaze, noting that “it is hardly necessary to stress the grave danger that may ensue for the civilian population.”³⁶⁷

Yet, some would counter that the standards are “too broad and too ambiguous for effective use in military operations.”³⁶⁸ This criticism is basically irrelevant because any action that might rise to the protocol levels of harm would likely already be precluded by virtue of general principles such as proportionality. Still others suggest that the standard is too high to have any real effect.³⁶⁹ The position taken by the DOD Gulf War Report falls squarely within the naysayer camp:

“(T)here were questions as to whether the Iraqi actions would have violated its environmental provisions. During the treaty’s negotiation, there was general agreement that one of its criteria for determining whether a violation had taken place (“long-term”) was measured in decades. It is not clear whether the damage Iraq caused, while severe in a layman’s sense of the term would meet the technical-legal use of the term in Protocol I. The prohibitions on the damage to the environment contained in Protocol I were not intended to prohibit battlefield damage caused by conventional operations and, in all likelihood, would not apply to Iraq’s actions in the Persian Gulf War.”³⁷⁰

³⁶⁶Sandoz, *supra* note 15, at 668.

³⁶⁷*Id.* at 669.

³⁶⁸Matheson, *supra* note 45, at 55. This contention is less than supportable. Imagine a small state facing a large invasion force from the sea. Further, assume the human rights record of the aggressor force during occupation was dismal. If the state in question could foil amphibious operations by dumping oil into the path of the oncoming fleet, would not such an action be both proportionate and militarily necessary even though the damage that would be caused would reach Protocol I levels?

³⁶⁹Betsy Baker, *Legal Protections for the Environment in Times of Armed Conflict*, 33 Va. J. Int’l L. 352, 368 (1993).

³⁷⁰DOD Report, *supra* note 63, at O-27.

While it may or may not be accurate to deny the damage technically reached the Protocol I threshold, it certainly is quite a stretch to suggest that nine million barrels of oil intentionally spilled into the sea or the setting of over 500 oil well fires is analogous to “battlefield damage caused by conventional operations.” The ICRC’s Hans-Peter Gasser has succinctly noted that “(a)s a legal statement this is questionable.”³⁷¹ He is quite right. Though the level of damage caused by the Iraqi actions was overestimated, it would appear clear from the commentary that this was precisely the *type* of action which the drafters had in mind.

As noted earlier, the United States has chosen not to ratify Protocol I (though over 130 other states have³⁷²), and specifically objects to those provisions which are directed to environmental protection. Are they nevertheless declaratory of international law? A number of commentators have argued that Articles 35(3) and 55 may be.³⁷³ The better argument is that while there may be an emergent “operational code” regarding environmental damage during warfare, it is premature to assert that customary law in the classic sense has solidified.³⁷⁴ Lack of international unanimity among the relevant actors, most notably the United States, is apt evidence of this fact. The ICRC concurs in this position,³⁷⁵ a concurrence that explains its aggressive dissemination efforts, particularly vis-à-vis its new environmental law of war guidelines.

³⁷¹Hans-Peter Gasser, *The Protection of the Environment During Armed Conflict and Other Military Operations*, NWC Symposium Paper, *supra* note 12, at 10.

³⁷²A current listing of the parties is maintained by the ICRC at the net site: www.icrc.ch/icrcnews.

³⁷³John Norton Moore has noted, for instance, that the two articles “may be declaratory of a rapidly developing customary international law.” Moore, *supra* note 70, at 78.

³⁷⁴For a discussion of operational codes and myth systems, see W. Michael Reisman & James Baker, *Regulating Covert Action: Practices, Contexts and Policies of Covert Coercion Abroad in International and American Law* 23-24 (1992); and W. Michael Reisman, *Jurisprudence: Understanding and Shaping Law* 23-25 (1987).

³⁷⁵1993 ICRC Report, *supra* note 130, at 5.

b. ENMOD

The final core prescriptive instrument relevant to the environment in the *jus in bello* is ENMOD. Negotiated contemporaneously with Protocol I and ratified by the United States in 1980, to some extent it was a reaction to the environmental modification techniques practiced during the Vietnam War, such as attempts to alter weather.³⁷⁶ Though the Soviet Union was the first to propose a limitation on environmental modification, the United States quickly became a prime mover behind the convention.³⁷⁷ In fact, the U.S. had already renounced the use of climate modification techniques in 1972 as a matter of policy.³⁷⁸ As of April 1996 there were 64 parties to the convention, including most major states (e.g., U.S., Russia, Germany and Japan). Countries which have signed but not ratified it include Iraq, Iran and Syria, whereas two significant hold outs are France and China.³⁷⁹

³⁷⁶ This certainly came through in the Senate hearings on the Convention. See *Environmental Modification Treaty: Hearings on the Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques Before the Senate Committee on Foreign Relations*, 95th Cong., 2d Sess. (1978); *Hearings to Hear Testimony on the Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques Before the Senate Committee on Foreign Relations*, 96th Cong., 1st Sess. (1979).

³⁷⁷ See Schindler & Toman, *supra* note 142, at 163. In 1974 the Soviet Union submitted a draft convention to the General Assembly, which in turn referred it to the Conference of the Committee on Disarmament. At that point the U.S. and U.S.S.R. provided the Conference identical drafts of a proposed convention. The text was revised in committee and submitted to the General Assembly, which approved it on 10 December 1976. The Convention was then opened for signature. It entered into force on 5 October 1978. *Id.*

³⁷⁸ Terry, *supra* note 84, at 64. Also recall the Sense of the Senate Resolution at note 30 and its accompanying text.

³⁷⁹ A list of current parties is maintained at net site: www.un.org/Depts/Treaty. Note that states which have signed but not ratified a convention are obligated not to take actions contrary to the object and purpose of the agreement, at least until it has made clear its intent not to become a party. Vienna Convention, *supra* note 183, art. 18.

ENMOD is "Hague Law" in the sense that it limits methods and means of warfare. It is not necessary that those methods and means actually affect the environment, for the only prohibition is on *use* of the environment as a weapon.³⁸⁰ Article I provides:

(1) Each State Party to this Convention undertakes not to engage in military or any other hostile use of environmental modification techniques having widespread, long-lasting or severe effects as the means of destruction, damage or injury to any other State party.

(2) Each State Party to this Convention undertakes not to assist, encourage or induce any State, group of States or international organization to engage in activities contrary to the provisions of paragraph 1.³⁸¹

Though the "widespread, long-standing or severe" formula resembles that found in Protocol I, here it is stated in the alternative, using "or." Since a technique meeting any of the threshold criteria will be prohibited, the result is a much more stringent standard of protection than found in Protocol I.

An effort was made during the ENMOD drafting process to clarify terminology. In the Understanding Relating to Article I, widespread was defined as "encompassing an area on the scale of several hundred kilometers," long-lasting as "lasting for a period of months or approximately a season" and severe as "involving serious or significant disruption or harm to human life, natural and economic resources or other assets."³⁸² Again, this evidences a higher standard than found in Protocol I, particularly when comparing the definition of long-lasting as seasonal with the commonly accepted understanding of the Protocol I limit as being measured in

³⁸⁰ This distinction motivated the name change in the "Jordanian Item" discussed *supra* at sec. II.D.

³⁸¹ ENMOD, *supra* note 32, art. I.

³⁸² Understanding Relating to Article I. There were four Understandings which, though not part of the Convention, were included in the report transmitted by the Conference of the Committee on Disarmament to the United Nations General Assembly. Report of the Conference of the Committee on Disarmament, Volume I, G.A.O.R., 35th Sess., Supp. No. 27, U.N. Doc. A/31/27 (1976), at 91-92, *reprinted in* Schindler & Toman, *supra* note 142, at 168.

decades. Similarly, describing severe as “serious or significant” also serves to heighten protection, as does the use of “disruption” instead of “damage” in setting forth the requisite violative effect. This attempt to define the core verbiage of the prescription was not universally accepted, though the vast majority of the parties have effectively done so by not filing reservations (interpretive statements) related to the definitional issues.³⁸³

One source of confusion may be differences in opinion regarding whether to use individual or cumulative effect in assessing the damage. This is an important issue in the Protocol I context as well. For instance, the United States has been reported as stating that the use of herbicides to modify the environment would not be forbidden unless the end result of an individual use was widespread, long-lasting or severe destruction.³⁸⁴ As one commentator notes, “(i)t follows that, as the consequences of an individual mission would probably fall below the individual thresholds, such missions would not be prohibited, despite the fact that overall the damage would clearly fall well outside allowed limits.”³⁸⁵

This assertion is certainly incorrect in the context of current understandings. Consider the most vivid example of environmental damage during hostilities in recent times, the intentional Gulf War oil spills. Virtually no one asserted, e.g., that each Iraqi spill should be considered individually in assessing legality. On the contrary, commentators were unanimous in citing the releases as *a* single operation despite the fact that the spills were separated in time and executed in

³⁸³ An exception, e.g., is Turkey. Turkey filed an interpretive understanding stating that in its opinion the “terms ‘widespread,’ ‘long-lasting’ and ‘severe effects’...need to be clarified. So long as this clarification is not made the Government of Turkey will be compelled to interpret itself the terms in question and consequently it reserves the right to do so as and when required.” Turkish Interpretive Statement Filed at Time of Signature, May 18, 1977, Multilateral Treaties Deposited With the Secretary General, internet site www.un.org/Depts/Treaty.

³⁸⁴ Jozef Goldblat, *The Environmental Modification Convention of 1977: An Analysis*, in *Environmental Warfare: A Technical, Legal and Policy Appraisal* (Arthur Westing ed. 1984), at 53, 55.

³⁸⁵ Carruthers, *supra* note 23, at 47.

differing ways (release from oil terminals, ships, etc.). Though this real world example is, admittedly, not an ENMOD type scenario, it illustrates by analogy the international community's attitude towards severability. What it did distinguish were the spills from the fires.

The best approach acknowledges, on the one hand, the inappropriateness of simply lumping all wartime environmental damage together to determine whether the Article I thresholds are met. This is so if only because an actor is unlikely to have been able to reasonably anticipate what the net results of his many environmentally destructive actions would be; it would be difficult to demonstrate even a "should have known," let alone a "knew," level of *scienter*. On the other hand, it would be even more absurd to excuse conduct because the ultimate damage resulted from multiple actions, such as aerial flights, none of which alone caused the requisite level of destruction. Instead, it should be asked whether the actions are part of a single integrated plan or operation designed to achieve a common, or closely related, result. By using an intent element as the connective variable, *scienter* problems (at least those involving scope of the relationship) are rendered *de minimus*.

Definitional issues also pervade Article II's use of the phrase "environmental modification technique" as "any technique for changing -- through deliberate manipulation of natural processes -- the dynamics, composition or structure of the earth, including its biota, lithosphere, hydrosphere and atmosphere, or of outer space."³⁸⁶ Illustrative examples cited in the Understanding Relating to Article II include "earthquakes, tsunamis, an upset in the ecological balance of a region, changes in weather patterns (clouds, precipitation, cyclones of various types and tornadic storms), changes in climate patterns, changes in the state of the ozone layer, and

³⁸⁶ ENMOD, *supra* note 32, art. II.

changes in the state of the ionosphere.”³⁸⁷ The Understanding indicates that while these are only examples, their use would create a presumption of violation.

What stands out in the definition is its limitation to techniques which involve manipulation of natural *processes*. There is relative consensus, for instance, that the techniques employed by Iraq during the Gulf War did not implicate ENMOD prohibitions, even had Iraq been a party.³⁸⁸ While the environment may have been the target, it was not the weapon. Therefore, despite a very restrictive *standard*, the narrow range of the techniques contemplated suggests that, given current technologies, the convention will be of limited value. Probably its greatest impact will be directional, i.e., foreclosing weapons development along the prohibited lines.

The future effectiveness of ENMOD may be further weakened by the enforcement regime it provides for. It is a regime based exclusively in state responsibility, possibly because the greater

³⁸⁷ The Understanding reads as follows:

It is the understanding of the Committee that the following examples are illustrative of phenomena that could be caused by the use of environmental modification techniques as defined in Article II of the Convention: earthquakes, tsunamis, an upset in the ecological balance of a region; change in weather patterns (clouds, precipitation, cyclones of various types and tornadic storms); changes in climate patterns; changes in ocean currents; changes in the state of the ozone layer; and changes in the state of the ionosphere.

It is further understood that all the phenomena listed above, when produced by military or any other hostile use of environmental modification techniques, would result, or could reasonably be expected to result, in wide-spread, long-lasting or severe destruction, damage or injury. Thus, military or any other hostile use of environmental modification techniques as defined in Article II, so as to cause those phenomena as a means of destruction, damage or injury to another State Party, would be prohibited.

It is recognized, moreover, that the list of examples set out above is not exhaustive. Other phenomena which could result from the use of environmental modification techniques as defined in Article II could also be appropriately included. The absence of such phenomena from the list does not in any way imply that the undertaking contained in Article I would not be applicable to those phenomena, provided the criteria set out in that article were met.

Understanding Relating to Article II, *reprinted in* Schindler & Toman, *supra* note 142, at 168.

³⁸⁸ The DOD Report cited the conclusions of the Ottawa Conference on this point with approval. DOD Report, *supra* note 63, at O-26 - O-27. However, the Commission for International Due Process of Law, in its draft indictment of Saddam Hussein and his advisers did allege an ENMOD violation. Kutner & Nanda, *supra* note 290, at 95.

part of the convention is focused on peacetime activities. The result is an essentially political (diplomatic) system for assuring compliance.³⁸⁹ In situations preliminary to armed conflict, or in armed conflict itself, the primary remedy is referral to the Security Council for enforcement action. This adds little; in most potential breaches of ENMOD, the Security Council would already be otherwise empowered to take appropriate actions under the Charter. Further limiting the enforcement regime's effectiveness is the fact that the convention's scope is limited to damage caused to *parties*.³⁹⁰

How should ENMOD be assessed overall?³⁹¹ Most importantly, ENMOD only affects a very narrow band of possible operations, many of which have not advanced beyond the concept stage.³⁹² Further, it has not attained the wide acceptance that Protocol I enjoys, a particularly unfortunate state of affairs given its limitation to territory of parties. Finally, ENMOD is another example of an absolute prohibition in that no military necessity or proportionality balancing is required prior to taking effect. This poses the same risk discussed with regard to Protocol I -- that human values might suffer for environmental ends. Of course, the fact that the requisite damage need not be to the *environment* of another party suggests (it is not explicit on its face) that the prohibition is framed in essentially anthropocentric terms. To some extent, this will mitigate the danger of not factoring in proportionality and necessity. Whether the gains

³⁸⁹ See ENMOD, *supra* note 32, art. V.

³⁹⁰ "...damage of injury to any other State Party" (emphasis added). *Id.* art. I(1).

³⁹¹ The ENMOD Convention provided for review conferences to assess the provisions and compliance therewith. ENMOD, *supra* note 32, art. VII. Neither the first conference in 1984 nor the second in 1992 were able to arrive at a consensus on anything significant. The second did, however, reaffirm the need to conduct further reviews. Dieter Fleck, *Legal and Policy Perspectives*, in *Effecting Compliance* 155-56 (Hazel Fox & Michael A. Meyer eds. 1993).

³⁹² For instance, one such concept involves melting the Arctic ice cover in order to raise the level of the sea and thereby flood coastal areas. Hans Blix, *Arms Control Treaties Aimed at Reducing the Military Impact on the Environment*, in *Essays in International Law in Honour of Judge Manfred Lachs* 703, 709 (Jerzy Makarazyk ed., 1984).

represented by ENMOD merit this risk is a fair matter for debate. Regardless of the answer, ENMOD is finding its way into the documents which underlie development of the operational code, law of war manuals.³⁹³

3. Miscellaneous Prescriptions

Though the four conventions addressed above represent the core environmental prescriptions in the *jus in bello*, others do contain provisions which enhance protection of the environment during hostilities. Among the most important are the 1925 Gas Protocol,³⁹⁴ the 1993 Chemical Weapons Convention,³⁹⁵ and the United Nations Conventional Weapons Convention.³⁹⁶ It is instructive to briefly mention each.³⁹⁷

The first of these, the 1925 Gas Protocol, was ratified by the United States in 1972. This instrument prohibits the use of "asphyxiating, poisonous, or other gases, and all analogous liquids, materials, and devices."³⁹⁸ Extending to both chemical and biological agents, the treaty is considered by many to be declaratory of customary international law. In terms of environmental protection, the prohibitions are significant, especially in light of the fact that chemicals can be transferred through the food chain.

³⁹³ German Manual, *supra* note 156, para 403 (distinguishes Protocol I from ENMOD damage); Australian Defense Force, *The Laws of Armed Conflict* (Pub. 37) (1994), at 4-5 - 4-6.

³⁹⁴ Gas Protocol, *supra* note 123.

³⁹⁵ Chemical Weapons Convention, *supra* note 126.

³⁹⁶ Conventional Weapons Convention, *supra* note 125.

³⁹⁷ Three conventions cited in the 1993 ICRC Report that do have some marginal environmental effect are: Biological Weapons Convention, *supra* note 124; the Convention for the Protection of Cultural Property, *supra* note 142; and the Convention Concerning the Protection of the World Cultural and Natural Heritage, Nov. 23, 1972, Nov. 16, 1972, 1037 U.N.T.S. 151.

³⁹⁸ *Id.*

Unfortunately, there is significant controversy over the scope of the convention, a point that should be obvious from the half century it took the United States to become a party. Even when it did ratify, the U.S. included a first-use reservation, i.e., a statement that it would not be bound by the prohibitions if the other side violated the agreement first.³⁹⁹ Executive Order 11850 implements the agreement. Setting forth U.S. policy, it retains the option of retaliation, renounces the use of herbicides in the absence of authorization by the National Command Authorities (NCA-President or Secretary of Defense) as a *matter of policy*, and characterizes the protocol as inapplicable to uses which are not methods of warfare. Executive Order 11850 then goes on to explicitly cite two circumstances when use of herbicides is authorized even absent formal NCA authorization -- domestic employment and use to clear the "immediate defensive perimeter" surrounding U.S. bases.⁴⁰⁰

Other states have also adopted first-use reservations,⁴⁰¹ thereby creating two distinct treaty regimes. By contrast, exclusion of herbicides is not widespread; a number of close allies have even expressly interpreted the prohibition as extending to all gases.⁴⁰² In fact, during the Vietnam War the U.N. General Assembly issued a resolution in response to U.S. herbicide use which purported to clarify the scope of the protocol. It stated that the protocol prohibited use of:

(a) (a)ny chemical agents of warfare--chemical substances, whether gaseous, liquid or solid--which might be employed because of their direct toxic effect on man, animals or plants;

³⁹⁹ "The Protocol shall cease to be binding on the government of the United States with respect to the use in war of asphyxiating, poisonous or other gases, and of all analogous liquids, materials, or devices, in regard to an enemy state if such state or any of its allies fails to respect the prohibitions laid down in the Protocol." Reservation Made on Ratification, *reprinted in* Schindler & Toman, *supra* note 142, at 126.

⁴⁰⁰ Exec. Order 11850, 40 Fed. Reg. 16187 (1975).

⁴⁰¹ E.g., France, Iraq, Israel, Libya, U.S.S.R. (Russia), and the United Kingdom, among others. For the text of the reservations, see Schindler & Toman, *supra* note 142, at 121-127.

⁴⁰² The Laws of War: A Comprehensive Collection of Primary Documents of International Laws Governing Armed Conflict 58 (W. Michael Reisman & Chris Antoniou eds., 1993).

(b) (a)ny biological agents of warfare--living organisms, whatever their nature, or infective material derived from them--which are intended to cause disease and death in man, animals, or plants, and which depend for their effect on their ability to multiply in the person, animal or plant attacked.⁴⁰³

Nevertheless, the issue of scope remains alive today, with lack of unanimity continuing to weaken the overall regime.⁴⁰⁴

A related convention is the Chemical Weapons Convention of 1993. The war between Iran and Iraq, in a fashion reminiscent of the First World War, drew attention to the horrors of chemical weapons when they were used both during military campaigns and against the Iraqi Kurds. As a result of these tragedies, the Conference on the Prohibition of Chemical Weapons adopted the Declaration on the Prohibition of Chemical Weapons in January 1989.⁴⁰⁵ Signatories of the declaration condemned the states which had employed chemical weapons and renounced their use. They also confirmed their commitment to the 1925 Gas Protocol prohibitions and urged non-parties to accede to the agreement.⁴⁰⁶

Concerted efforts to secure a robust chemical weapons convention followed the conference. That effort came to fruition in 1993; as of April 1996, the Chemical Weapons

⁴⁰³ Question of Chemical and Bacteriological (Biological) Weapons, U.N.G.A. Res. 2603A, U.N. G.A.O.R., 24th Sess., Supp. No. 30, at 16, U.N. Doc. A/7630 (1970).

⁴⁰⁴ For example, Professor Verwey has noted that "(t)he better view appears to be, however, that this protocol was never intended to protect the environment, and that even the employment of herbicides and defoliant agents of the types used during the Vietnam War would only be prohibited to the extent that they can be proven to be toxic to human beings and to actually cause human casualties." Verwey, NWC Symposium Paper, *supra* note 12, at 5. On the other hand, Professor Goldblat states that the Protocol "is widely interpreted as applying not only to humans and animals, but also to plants. This is now also recognized by the United States, which made extensive use of herbicides during Vietnam." Goldblat, *supra* note 335, at 403. In fact, most states do see the Protocol as extending to plants, and though the United States does not, it has renounced the use of herbicides as a matter of policy except in certain circumstances.

⁴⁰⁵ Final Declaration of the Conference of the States Parties to the 1925 Geneva Protocol and Other Interested States on the Prohibition of Chemical Weapons, Jan. 11, 1989, *reprinted in* 28 I.L.M. 1020 (1989).

⁴⁰⁶ *Id.*

Convention has 160 signatories, including the United States, 49 of which have become parties.⁴⁰⁷

It was transmitted to the Senate for ratification in November 1993. The treaty remains open for signature, and will come into force in accordance with its terms 180 days after deposit of the 65th instrument of ratification.⁴⁰⁸

By the convention, parties bind themselves not to, under any circumstances, use chemical weapons or “develop, produce, otherwise acquire, stockpile or retain chemical weapons, or transfer, directly or indirectly, chemical weapons to anyone.”⁴⁰⁹ The preamble emphasizes that this prohibition is complementary to, not in lieu of, the 1925 Gas Protocol. It also addresses several issues which have generated controversy regarding the latter agreement. For instance, it rules out retaliation with chemicals,⁴¹⁰ and, by characterizing them as such, settles much of the debate over whether herbicides are chemicals.⁴¹¹

An important feature is the decision to describe the prohibition in terms of “means or method” of warfare.⁴¹² This begs the question of whether use in situations such as *in extremis* hostage rescue or riot control during civil affairs operations is permissible. The position of the Army is that the convention is inapplicable in MOOTW because they are “operations conducted

⁴⁰⁷Multilateral Treaties Deposited with the Secretary General, internet site www.un.org/Depts/Treaty.

⁴⁰⁸Chemical Weapons Convention, *supra* note 126, art. XXI. For an excellent summary of the convention, as well as the history leading up to its completion, see The Chemical Weapons Convention, internet site www.opcw.nl/guide.htm.

⁴⁰⁹Chemical Weapons Convention, *supra* note 126, art. I(1).

⁴¹⁰The convention is not subject to reservation. *Id.* art. XXII.

⁴¹¹“‘Toxic Chemical’ means: (a)ny chemical which through its chemical action on life processes can cause death, temporary incapacitation or permanent harm to humans or animals.” *Id.* art II(2). “Each State Party undertakes not to use riot control agents as a method of warfare.” *Id.* art. I(5).

⁴¹²For example, in setting forth uses of chemicals that are not prohibited, the convention includes “(m)ilitary purposes not connected with the use of chemical weapons and not dependent on the use of the toxic properties of chemicals as a method of warfare.” *Id.* art. II.9(c).

for peaceful purposes and do not constitute armed conflict.”⁴¹³ Lest this position be characterized as an excessively liberal interpretation, it must be remembered that Executive Order 11850 restrictions remain intact during MOOTW.

While the Army’s approach makes much sense, where does its outer limit lie? For instance, would Saddam Hussein’s actions against Iraqi Kurds be covered? That would depend on the characterization of the operations. Were they episodes of “armed conflict” or not? This latter query suggests what is probably the best interpretation -- that use is forbidden in situations amounting to either international (Protocol I) or non-international (Protocol II) “armed conflict.”⁴¹⁴

The last of the three agreements is the United Nations Conventional Weapons Convention. Like Protocol I and ENMOD, this agreement specifically addresses the environment, but does so in a slightly different fashion. Protocol I discusses *use* of weapons, but not weapons themselves. Nor does ENMOD, for it is concerned with use of the environment *as* a weapon through manipulation of natural processes. The Conventional Weapons Convention begins to fill the gap by focusing on specific conventional weapons, some of which are capable of harming the environment.

The agreement begins somewhat controversially. After reiterating the customary international law principle of humanity,⁴¹⁵ it restates Articles 35(3) of Protocol I.⁴¹⁶ This led

⁴¹³Operational Law Handbook, *supra* note 168, at 5-5.

⁴¹⁴See note 8 for the distinction between international and non-international armed conflict.

⁴¹⁵“Basing themselves on the principle of international law that the right of the parties to an armed conflict to chose methods or means of warfare is not unlimited, and on the principle that prohibits the employment in armed conflicts of weapons, projectiles and material and methods of warfare of a nature to cause superfluous injury or unnecessary suffering...” Conventional Weapons Convention, *supra* note 125, at pmbl.

⁴¹⁶“Also recalling that it is prohibited to employ methods or means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment...” *Id.*

France and the United States, for instance, to attach reservations (understanding for the U.S.) to their instruments of ratification indicating that the preamble only applies to Protocol I parties.⁴¹⁷ Issues of applicability aside, the heart of the convention is found in three attached protocols.⁴¹⁸ The first, which addresses non-detectable fragments is not applicable to this study and will not be addressed.⁴¹⁹ Protocol II covers mines, booby traps and similar devices.⁴²⁰ While mines would be unlikely to cause extensive damage to the environment, they certainly could harm humans and animals, and render areas of land unusable. The Mine Protocol yields environmental protection in two ways. First, a proportionality standard is applied balancing civilian objects against direct military advantage.⁴²¹ It then imposes humanity based standards by forbidding indiscriminate use, requiring mine locations to be recorded and mandating the use of self neutralizing mines when remotely delivered.⁴²² These are classic anthropocentric provisions providing indirect environmental protection.

Direct protection of the environment is found in Article 2(4) of the agreement on incendiary weapons, Protocol III. By that provision, "(i)t is prohibited to make forests or other

⁴¹⁷The understandings and reservations may be found at Multilateral Treaties, *supra* note 407. The U.S. Understanding is as follows: "The United States considers that the fourth paragraph of the preamble to the convention, which refers to the substance of the provisos of article 35(3) and article 55(1) of Additional Protocol I to the Geneva Conventions for the Protection of War Victims of August 12, 1949, applies only to States which have accepted those provisions." *Id.*

⁴¹⁸ Addition of a fourth protocol on blinding lasers was approved by the October 1995 Review Conference. Additional Protocol on Blinding Laser Weapons (Protocol IV) to the Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May be Deemed to be Excessively Injurious or to Have Indiscriminate Effects, Oct. 12, 1995, U.N. Doc. CCW/CONF.I/7 (1995).

⁴¹⁹Protocol on Non-Detectable Fragments (Protocol I), Conventional Weapons Convention, *supra* note 125.

⁴²⁰ Protocol on Prohibitions or Restrictions on the Use of Mines, Booby Traps and Other Devices (Protocol II), Conventional Weapons Convention, *supra* note 125.

⁴²¹The Protocol prohibits placement of weapons "which may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated." *Id.* art. 3(3)(c).

⁴²²*Id.* arts. 3, 5 & 7.

kinds of plant cover the object of attack by incendiary weapons except when such natural elements are used to cover, conceal or camouflage combatants or other military objectives, or are themselves military objectives.”⁴²³ The United States has elected not to ratify this protocol.

There is little question that Article 2(4) would enhance environmental protection, for incendiary weapons, not unlike forest fires, can have devastating environmental impact.⁴²⁴ The smoke itself is noxious, animal and plant life is destroyed and habitats are often irreparably damaged. At the same time, though, the article does make allowances for necessity by excluding the three most likely military uses of such areas -- it acts as a toggle switch for the protections provided. Of course, once the prohibition is “turned off,” proportionality analysis still has to be performed to determine if the target is indeed legitimate.

This approach may serve as a useful model for future environmental prescriptions. Absolute prohibitions such as Article 35(3) risk the possibility of actually driving harm caused *up* by not accounting for proportionality or military necessity. On the other hand, to simply cite the principles is to create an exception that swallows the rule. Protocol III mitigates these problems by outlining the actions to which a response is militarily necessary, thereby opening the door for a follow-on proportionality analysis. Admittedly, any time applicable situations/scenarios are catalogued in law of war instruments, some either slip through the cracks or surface later as warfare evolves. However, it is preferable to address them supplementally than to craft a

⁴²³Protocol on Prohibitions or Restrictions on the Use of Incendiary Weapons (Protocol III), Conventional Weapons Convention, *supra* note 125, art. 2(4).

⁴²⁴In 1973, the Secretary General of the United Nations noted that “(a)lthough there is a lack of knowledge of the effects of widespread fire in these circumstances, such attempts may lead to irreversible ecological changes having grave long-term consequences out of all proportion to the effects originally sought. This menace, though largely unpredictable in its gravity, is reason for expressing alarm concerning the massive employment of incendiaries against the rural environment.” United Nations, Report of the Secretary-General: Napalm and Other Incendiary Weapons and All Aspects of Their Possible Use 55 (1973).

prescription devoid of substantive effect. Therefore, albeit limited in scope, the Protocol III environmental provision does offer workable protection of one aspect of the environment, and contains the seeds for future environmental law of war efforts.

D. Responsibility Under the Jus in Bello

The issue of responsibility in the context of peacetime prescriptions was raised earlier. *Wartime* responsibility is a relatively well-settled topic. Generally, a wrong committed during wartime results in liability for consequences arising therefrom. Payment of reparations is the usual remedy. The basic principle was expressed over a half century ago by the Permanent Court of International Justice in the well-known case of *The Factory at Chorzow*. There, the court held that “reparation must, as far as possible, wipe out all the consequences of the illegal act and reestablish the situation which would, in all probability, have existed if that act had not been committed.”⁴²⁵ The compensation requirement, including that resulting from “all acts committed by persons forming part of its armed forces,” is also found in Hague IV and Protocol I. ENMOD contains no liability provision.⁴²⁶

Interestingly, under Hague IV and Protocol I responsibility lies for acts by a state’s “organs” even if they are *ultra vires*.⁴²⁷ This is not the case under general principles of international law, such as those set forth in the International Law Commission’s Draft Articles of State Responsibility. Thus, Hague IV and Protocol I would appear to establish a higher standard of responsibility for violations of their rules than would otherwise be the case. On the other hand,

⁴²⁵ *The Factory at Chorzow* (Germ. v. Pol.), 1928 P.C.I.J., ser. A, No. 17, at 47.

⁴²⁶ Hague IV, *supra* note 121, art. 3; Protocol I, *supra* note 8, art. 91. The text is found *supra* at note 244.

⁴²⁷ See discussion in Greenwood, *supra* note 215, at 5, citing the decision of the arbitral tribunal in United States-Mexican Claims Commission, *Youmans*, 4 R.I.A.A. 110 (1926).

one might argue that the two instruments merely codify what has become a generally accepted principle of state responsibility during armed conflict. Whether this is so or not is difficult to assess because of the limited experience with reparations. Consequently, as Professor Chris Greenwood has noted, "(o)n the whole...state responsibility has not proven a particularly effective means of enforcing the law."⁴²⁸

Even if reparations were widely imposed, it is unlikely they would be an effective deterrent to environmental destruction. States which resort to armed force are unlikely to rationally decide to forego an act because of the pecuniary risk, for the risk only becomes a reality if the state suffers a military defeat. The deterrent effect of possible defeat would certainly subsume any generated by the possibility the loser might have to make reparations. After all, in the vast majority of cases the likelihood of defeat will exceed the likelihood of having to pay reparations; states sometimes lose without having to pay reparations, but they almost never make reparations without losing. This is certain to remain the case, at least until the emergence of a supranational authority with true adjudicative and enforcement powers, i.e., one that can make a wrongdoing *victor* pay.

What the logic demonstrates is that two purposes, retribution and restitution -- punishing the wrongdoer and making victims whole -- are at the core of reparations. If deterrence was the goal, then wrongdoers would have to believe that their misdeeds would almost certainly result in punishment. However, reparations are infrequent. By contrast, both restitution and retribution are more easily balanced by competing interests (e.g., post-hostilities political stability) because they are not generally intended to alter the violator's behavior. Instead, they are *victim* focused.

⁴²⁸Greenwood, *supra* note 215, at 8.

It is not the intent here to downplay the role of state responsibility, or the reparations that flow therefrom. That retribution is a valid aim of punishment in the international arena, much as it is in domestic judicial systems, can convincingly be argued. More importantly, reparations contribute to the rebuilding of a global community harmed by breach of its norms. This makes particular sense in the environmental context for restoration is a costly proposition.

The Gulf War is an excellent case in point. In October 1990 the Security Council passed Resolution 674, which stated that "under international law (Iraq) is liable for any loss, damage or injury arising in regard to Kuwait and third States, and their nationals and corporations, as a result of the illegal invasion and occupation of Iraq."⁴²⁹ This was followed in March by Resolution 686, which insisted that Iraq "accept in principle its liability under international law for any loss, damage, or injury" which derived from those actions.⁴³⁰ As the Gulf War drew to a close, the cease fire resolution passed by the Security Council, Resolution 687, plainly stated that Iraq was responsible for the damage caused by its invasion and occupation of Kuwait, and called for establishment of a body to handle claims against Iraq from a fund capitalized through a levy on Iraqi oil exports.⁴³¹ The United Nations Compensation Commission was established by Resolution 692 and is currently involved in the process of receiving claims; however, the only money in the fund consists of contributions by several states drawn primarily from frozen Iraqi assets.⁴³²

⁴²⁹S.C. Res. 674 (Oct. 29, 1990), U.N. Doc. S/RES/674 (1990), *reprinted in* 29 I.L.M. 1561 (1990).

⁴³⁰S.C. Res. 686 (Mar. 2, 1991), U.N. Doc. S/RES/686, (1991), *reprinted in* 30 I.L.M. 568 (1991).

⁴³¹S.C. Res. 687 (Apr. 3, 1991), U.N. Doc. S/RES/687 (1991), *reprinted in* 30 I.L.M. 846 (1991).

⁴³²S.C. Res. 692 (May 20, 1991), U.N. Doc. S/RES/692 (1991), *reprinted in* 30 I.L.M. 864 (1991). On the work of the Commission, see John R. Crook, *The United Nations Compensation Commission - A New Structure to Enforce State Responsibility*, 87 Am. J. Int'l L. 144 (1993); Ronald J. Bettauer, *The UN Compensation Commission -- Developments Since 1992*, 89 Am. J. Int'l L. 416 (1995); Hazel M. Fox, *Reparations and State Responsibility*, in Rowe, *supra* note 305, at 261; Conrad K. Harper, *Comments: The Symposium on the Protection of the Environment During Armed Conflict and Operations Other Than War*, NWC Symposium Paper, *supra* note

By basing liability on Iraq's invasion and illegal occupation of Kuwait rather than an environment specific prescription, the Security Council neatly sidestepped the issue of responsibility for violation of the environmental law of war. Specifically, the basis of liability was a violation of U.N. Charter Article 2(4), a wrongful resort to force under the *jus ad bellum*. This will actually facilitate the making of claims because by framing them in this fashion, technical legal issues involving party status, interpretation of treaty text, the content of customary international law and so forth will be avoided. Essentially, the inquiry is reduced to two issues of fact -- causation and damage. Environmental is merely one of many forms of compensable damage.⁴³³ This approach actually casts the net of liability much more broadly than would have been the case if damages for environmental damage had been based on the law of armed conflict's

12, at 7-9. The current deadline for claims submission is February 1, 1997. Compensation Commission, Governing Council Decision No. 12, U.N. Doc. S/AC.26/1992/12. The State department ultimately expects approximately 200 billion dollars in claims to be filed. Harper, *supra*, at 7.

⁴³³Included within the damage Iraq is responsible for is that caused as a result of Coalition operations. This approach is premised on the theory that "but for" Iraq's wrongful acts, Coalition operations would never have occurred. The relevant verbiage is "(t)his (responsibility) will include any loss suffered as a result of: (a) Military Operations or threat of military action by either side during the period 2 August 1990 to 2 March 1991; ... (and) (c) Actions by officials, employees or agents of the government of Iraq or its controlled entities during that period in connection with the invasion or occupation." Compensation Commission, Governing Council Decision No. 7 (Revision 1), para. 34, U.N. Doc. S/AC.26/1991/7/Rev. 1 (1992). The actual damage the Iraqis will be paying for is:

direct environmental damage and depletion of natural resources as a result of Iraq's unlawful invasion and occupation of Kuwait. This will include losses or expenses resulting from:

- (a) Abatement and prevention of environmental damage, including expenses directly relating to fighting oil fires and stemming the flow of oil in coastal and international waters;
- (b) Reasonable measures already taken to clean and restore the environment or future measures which can be documented as reasonably necessary to clean and restore the environment;
- (c) Reasonable monitoring and assessment of the environmental damage for the purposes of evaluating and abating the harm and restoring the environment;
- (d) Reasonable monitoring of public health and performing screenings for the purpose of investigating and combating increased health risks as a result of environmental damage; and
- (e) Depletion of or damage to natural resources.

Id.

environmental provisions. The down side is that an opportunity to clarify the substantive law may have been missed.

Finally, mention should be made of individual responsibility. Specific provisions, particularly the grave breach regime, were discussed above. There is little doubt that environmental damage during armed conflict can form the basis for criminal culpability under the laws of war. In addition, the ILC's Draft Code of Crimes Against the Peace and Security of Mankind provides for trial of "an individual who willfully causes or orders the causing of widespread, long-term and severe damage to the natural environment."⁴³⁴ This applies during both peace and war, but, as indicated in the text, is limited to intentional acts (vice negligent or reckless). Though the Draft Code is non-binding, it certainly enhances an argument that individual responsibility should lie in cases of environmental destruction.

In the Gulf War, however, there was no attempt to impose individual responsibility despite Iraqi war crimes. The U.S. Army's War Crimes Documentation Center, a group tasked with assessing the Iraqi actions and gathering evidence of violations, specifically found that individual war crimes had been committed.⁴³⁵ In its final report, the center characterized the Iraqis as having violated both Article 23(g) of Hague IV and Article 147 of Geneva Convention IV, even though it described the rationale behind the destruction as "unclear."⁴³⁶ Noting that criminal responsibility rests with the commander when he orders, permits or fails to stop offenses he knew or should have known of, the report was unambiguous when referring to Saddam Hussein:

⁴³⁴ Draft Code of Crimes Against the Peace and Security of Mankind, art. 26, *in* Report of the International Law Commission on the Work of Its 43d Session, GAOR, 46th Sess., Supp. 10, U.N. Doc. A/46/10, at 235, *reprinted in* 30 I.L.M. 1584 (1991).

⁴³⁵ War Crimes Documentation Center, International Affairs Division, Office of the Judge Advocate General, U.S. Army, Report on Iraqi War Crimes (Desert Shield/Desert Storm) (unclassified version), January 8, 1992 [on file at Naval War College Library, Newport, Rhode Island].

⁴³⁶ *Id.* at 10-11.

The evidence collected during this investigation establishes a *prima facie* case that the violations of the law of war committed against Kuwaiti civilians and property, and against third party nationals, were so widespread and methodical that they could not have occurred without the authority or knowledge of Saddam Husayn. They are war crimes for which Saddam Husayn, officials of the Ba'ath Party, and his subordinates bear responsibility. However, principal responsibility rests with Saddam Husayn.⁴³⁷

Submitted to the President of the Security Council in March 1993, the report was subsequently circulated throughout the United Nations.⁴³⁸

Why were no charges ever brought if the evidence was so clear? The reasons are primarily practical, not legal. First, it would have been nearly impossible to bring Saddam Hussein and his cohorts to trial; as a result, any proceedings would have to have been held *in absentia*. Further, the possibility of individual criminal punishment would have made it difficult to negotiate war termination with the Iraqis. Those likely to face criminal proceedings were still in firm control of the country; they were not about to agree to truce terms that included their arrest. Finally, the political context at the time was an important driver. That a coalition with membership ranging from Syria to Canada held together at all is surprising. Since the attitude towards legal proceedings varied widely, particularly in the Arab world, to have convened trials in this post-war political and emotion laden environment might well have ruptured the fragile relations that had been forged. In fact, war aims had intentionally been kept limited to make possible the coalition's creation. To bring Saddam Hussein to trial would have represented a clear expansion beyond those aims.

⁴³⁷ *Id.*

⁴³⁸ As U.N. Doc. S/25441 (1993).

Did the absence of trials negatively affect the law of war? In the view of the State Department's Legal Adviser, Conrad Harper, trials would have been untimely.

Whether the international community will one day elect to bring to bear the full force of criminal sanctions against those who perpetrate gross and unjustified environmental damage in warfare remains to be seen. In my view, we have not yet arrived at the point where the international community is willing to put its credibility, commitment and full force of its conscience behind environmental crimes prosecutions in much the same way that it has demanded accountability in the context of Rwanda and Bosnia.⁴³⁹

If his assessment is correct, and there is no reason to believe it is not, then trials would actually have been a step backwards -- they would have been controversial and revealed divisiveness within the international legal community over what the prescriptions actually are. While this might have been a useful exercise from a pedagogical perspective, the environmental protection regime would have been weakened by highlighting legal fault lines in a politically charged matter.

IV. WHERE TO FROM HERE?

A. Appraising the Present Law

By now, there should be little question that the prevailing assessment of the environmental law of war is one of adequacy. In response to those who would assert the contrary by pointing to Iraqi actions in the Gulf, adequacy advocates urge that the problem is enforcement, not law. If only Iraq had complied with the existing law of war all would have been well. They cite the nearly unanimous condemnation of Saddam Hussein's actions as evidence of universal acceptance of the relevant prescriptive norms.

⁴³⁹ Harper, *supra* note 432, at 10.

This school of thought may perhaps reflect a bit of goal-orientation. Guided by our quite justifiable indignation over Hussein's appalling actions, we *wanted* him to be guilty of war crimes. As members of a predominantly positivist legal culture, we also wanted to be able to point to specific provisions of international law that had been violated. Thus, we looked to the classic work horses of the law of war -- customary law, Hague law and Geneva law -- and predictably found what we needed. Having embraced this position, shortcomings in the application of the environmental law of war logically had to be attributed to something else. Usually one of two culprits was cited, poor enforcement mechanisms or failure to understand what the prescriptions "really mean."

Based on the analysis set forth above, this position proves less than convincing. The existing environmental law of war neither adequately echoes community values, nor serves to foster its aspirations. The obstacles this body of law poses to effective legal deterrence of environmental damage during armed conflict have been addressed at length. They may be summarized as grouped into several broadly expressed failings.

First and foremost, if law is to serve the aspirations of the global community, it must be of practical application. Unfortunately, the lack of environmental specificity forces us to fall back upon traditional law of war principles such as necessity and proportionality, *even* when applying treaty law provisions. These customary prescriptions employ continuums and balancing tests, the manipulation of which is rendered more complex by inclusion of environmental concerns. Additionally, consider the plethora of uncertainties which stand in the way of practical and consistent application. Is peacetime environmental law applicable in armed conflict or not? Is the environment a separate value category? If so, should it be measured in an anthropocentric or

inherent value context? What weight should be accorded to environmental values? How far should chains of causation stretch? How should the great uncertainty of environmental impact be handled? These and others issues raised throughout this article are difficult to contemplate in the sterile environment of academia, let alone the fog and friction of war. This would be so even in a monocultural context; to expect consistent results *across* cultures is ambitious to say the least.

The second problem is that of definitions. Environment specific treaty law, issues of applicability aside, employs the terms “widespread,” “long-term” and “severe” in its key provisions. Since these appear to have become the agreed upon terms of art to be used, one would imagine that they would enjoy a common understanding. However, their meaning has been variously interpreted, for instance, by the U.S. Army, German Government, drafters of Protocol I and ENMOD signatories. It is a situation which complicates application of the environmental law of war enormously.

Finally, the law which does serve to protect the environment lacks internal coherence. Each facet was developed in response to very different problems, in varying contexts and at different times. No effort was made to deconflict its various components, or to seek the protective synergism that complementary humanitarian law offers.⁴⁴⁰ In some cases, most notably the definitional quandary just mentioned, this lack of coherence actually operates to weaken existing prescriptions by muddying the waters. Left remaining is a body of law which offers only haphazard protection to the environment, protection characterized by significant gaps.

That the law proper presents problems is clear. But what about the direction in which it is headed? At the outset of this article the directional nature of law was highlighted. Is the law on

⁴⁴⁰As was the intent, e.g., in the drafting of Protocol I *vis-à-vis* the Geneva Conventions of 1949.

course? Is it moving towards enhancement of world order, or are the trends that have been identified ultimately counterproductive?

While the general vector of the environmental law of armed conflict is correct, it risks going too far. It is absolutely essential that the environment be considered *qua* environment, not simply as yet another civilian object. This is so because of the unique characteristics the environment exhibits. In particular, warfare affects non-belligerents environmentally, either in their own territory or the global commons. To diminish water quality of a river, e.g., is to harm all of the riparian states, not simply the target belligerent. To spew pollutants into the atmosphere is to render damage elsewhere dependent on the whims of the wind. That environmental damage is difficult to bound by the concept of sovereignty is often true regardless of the intent of the actor.

The qualitative distinction between environmental and more traditional damage is also suggested by the scope of reverberating effects. Traditional warfare is replete with instances of reverberation, some intentional, some not. Scholars and practitioners may quibble about the severity and proportionality of bombing electrical targets during the Gulf War, for example, but no one would suggest either that its consequences were limited to destruction of the target, or that reverberations were irrelevant to proportionality calculations. Even so, the environment *is* different, for its very essence is interconnectedness. While it is true that warfare can cause harm beyond the direct application of force, it is difficult for it *not* to with regard to the environment. Further, in non-environmental damage the chain of reverberation is usually much shorter. A building is blown up, only to be rebuilt or have its occupants or function move elsewhere. The impact of environmental damage, by contrast, will often play out through many iterations; an

effect on one species influences many, a phenomenon which in turn repeats itself at each higher level. It is much more pervasive than the traditional damage we are used to in armed conflict.

Not only is the impact more likely to be cast broadly, but it is also more likely to prove irreversible. There is no way, for example, to recreate a species that has been destroyed, and if that species constitutes the primary food source for others, the reverberating effect will be no less decisive for them. The same is true of the many natural resources which life, human or otherwise, relies on. Some means of warfare may even have mutagenic effects; unfortunately, science is incapable of returning genetic structure to its original state. Finally, and perhaps most importantly, many species which have suffered harm *can* survive if provided sufficient time, space and resources to do so. This is certainly the case with man. However, destruction or contamination of an area denies both space and resources. Thus, environmental devastation, unlike most other damage in warfare, may truly represent crossing the Rubicon of survival.

There is little doubt that law has moved, albeit slowly and in a very limited way, towards recognizing the uniqueness of the environment and its need for special protection. This is apparent in Protocol I and ENMOD's environment specific provisions, the first in conventions dealing with armed conflict. It is also evident in the various peacetime instruments that have come into effect over the past several decades, and in hortatory and aspirational language found in various non-binding sources, such as the Stockholm and Rio Declarations. Indeed, even though the Security Council Resolutions demanding compensation from Iraq were based on non-environmentally related *jus ad bellum* grounds, the environment *was* specifically singled out, in and of itself, as a damaged entity meriting Iraqi liability.

Every indication is that the law is moving in the right direction. The problem is that it is moving too far. What law is, and how it operates, really depends on the cognitive prism through which it (and the context in which it will be applied) is viewed. These prisms can be thought of as placed along a continuum. Until Vietnam, the environment was not seen as having any independent existence, a view representing one extreme of the continuum. Following that conflict, it began to be recognized as a distinct entity, albeit primarily in anthropocentric terms.

Conceptually, anthropocentrism is not a point on the continuum, but rather an area along it within which there are varying degrees and styles of the perspective. For instance, Article 55 of Protocol I is framed in terms of "health or survival," whereas the Rio Declaration placed great weight on the interests of developing states. At the limit of anthropocentric environmentalism are those who would weight the environment using measures such as its aesthetic contribution, or perhaps even the sense of placement in the greater scheme of things that it offers man. Yet, in all of these cases the human variable is factored in. One may or may not agree with the precise value that is posited, but at least all valuations are operating from within the same broad context.

The problem is that some would move beyond the limits of anthropocentrism into valuation based on intrinsic worth. An excellent example of this approach is found in Professor Verwey's thoughtful work. A pioneer in identifying the perspectives which have been developed in this article, Professor Verwey argues for "common recognition" of three principles:

1. the indivisibility of a healthy environment as an indispensable condition for the survival of present and future human generations;
2. the necessity to disconnect the legal protection of the environment in times of armed conflict from its anthropocentric legal enclosure; (and)

3. the need to expand the protective scope of the relevant rules beyond the current level of merely prohibiting known or expectable and directly demonstrable environmental damage.⁴⁴¹

Devotion to the first of the principles is shared by many anthropocentrics; after all, it is couched in anthropocentric terms. Similarly, the third is a principle of causation more likely to be embraced by intrinsic value advocates, but not exclusively so. One might want to prohibit environmental damage which *may* (Professor Verwey's term⁴⁴²) occur because if it does it will negatively affect humans. By contrast, the second principle, at least as stated, is classic intrinsic value.⁴⁴³ It essentially urges protection of the environment regardless of what it does for man. This does not mean that the human contribution the environment makes will be ignored, but it does go beyond that to ask the value of the environment in and of itself.

Although it is absolutely clear that anthropocentric approaches of one sort or the other dominate thinking about the impact of war on the environment, there are indications that law is at least moving in the intrinsic value direction. The fact that it proved necessary to satisfy both camps by including two environmental provisions in Protocol I demonstrates the degree of support for the approach. Other examples include the menu of options in the proposal offered at the London Conference by Professor Plant, as well as the general tenor of recommendations by organizations such as Greenpeace.⁴⁴⁴

⁴⁴¹Verwey, Leiden J. Int'l L., *supra* note 12, at 33.

⁴⁴²*Id.* at 38-40.

⁴⁴³"As stated" is used as a qualifier because the discussion of the principle by Professor Verwey includes the concept of *per se* protection discussed elsewhere in this article. *Id.* at 36-37. Indeed, he speaks of the possibility of recognizing the environment as the *common heritage of mankind*, a particularly anthropocentric characterization. As noted earlier, the mere fact that the environment is protected *per se* does not imply it is not valued for its anthropocentric character. It simply means that it is considered an independent and unique entity. Whether it is valued intrinsically, anthropocentrically or both is a separate question.

⁴⁴⁴Greenpeace recommends five criteria for a new convention on the environment in warfare. Three could be either anthropocentric or intrinsic value: 1) environmental damage to third states is impermissible; 2) the environment needs to be protected in all conflicts, including those to which the Geneva Conventions are

This trend has troubling implications. First, it is one thing to recognize that the environment *per se* must be protected, and quite another to urge that the environment be evaluated divorced from anthropocentric considerations. In the former case, the uniqueness of the environment is recognized, but the *processes* of valuation remain relatively intact. Though valuation is more complex when the environment is factored in, anthropocentric valuation not only provides a familiar frame of reference, it also keeps balancing tests two dimensional. In purely intrinsic value analysis, by contrast, process and substance are thrown askew. As illustrated in the discussion of customary international law principles, introduction of a third variable necessitates a three way balancing test -- environment, human values and military advantage. Furthermore, if not valuing the environment in human terms, what standard should be used? The difficulties of cross-cultural value paradigms in the anthropocentric sense would pale beside those presented by intrinsic valuation.

In the end, what we will be left with is an incredibly complex process that defies practical application and encourages divisiveness within the community of those who wish to ensure environmental protection during warfare. Well-meaning efforts to enhance protection by recognizing the intrinsic value of the environment will have *exactly the opposite result*. The flawed prescriptions currently in place would collapse under the weight of attempts to sort through the approach in practice.

There is an even more basic problem with the intrinsic value perspective than how to conduct balancing or what weight to attribute to balanced values. Does the international

inapplicable; and 3) states must be responsible for the damage they cause. The remaining two have intrinsic value underpinnings. First, it is recommended that military interests not outweigh environmental protection. Complementing this, the second suggests that military operations that would cause either unknown or severe environmental damage be prohibited. Hawkins, *supra* note 88, at 221.

community really want to adopt an approach that would *sacrifice* human to environmental interests? Intrinsic value advocates would probably rush to protest that was not what they meant at all. But, of course it is. Any time you attribute autonomous value to the environment, you risk the possibility that in trying to safeguard it you will operate at cross purposes with other values. The fact that values conflict is the very *raison d'être* of balancing tests. Possible examples abound. Closing territory to military activities, e.g., may have very real human consequences. Perhaps an attacking force will be forced into an avenue of attack that places the population at greater risk. Maybe environmental restrictions will disallow tactics that would enhance protection of the civilian population. For instance, if smoke is the only way to prevent aerial attack which results in extensive collateral damage, do we want to deny the tactic to a victimized state with no other means of defending itself?

The issue of sacrificing human values presents itself in two guises. The easier of the two occurs when environmental values are *added* to the balancing process. Can human values be outweighed by the intrinsic value of the environment? Most reasonable commentators would agree that there are times when humans should be placed at *risk* to protect the environment. By rejecting intrinsic valuation, the framing of this quite logical assertion in an "either-or" fashion can be avoided. Viewed anthropocentrically, and very broadly so, the question is not when do human values have to be sacrificed, but rather what are the *net* human values which will be input to the equation.

A much more disturbing dilemma is determining when the environment should be protected without considering human values at all, i.e., without resorting to a balancing test. This is exactly what Article 35(3) does, for once the level of damage reaches a certain point, the

protection kicks in regardless of any countervailing human values. Prescriptions crafted in this fashion are extraordinary in the sense that they represent a rejection of the premise that there are times when human would outweigh environmental values. For instance, option A of the Plant proposal prohibits method or means of warfare which are intended to, or may, cause any damage to the environment.⁴⁴⁵ This is intrinsic value at its extreme. No attempt to judge the value to man of the environment being damaged is made. There is no balancing of any sort, only an absolute prohibition. Yet, if failure to acknowledge the environment in and of itself was objectionable, why would it be any less objectionable to ignore the human factor? Are humans not as much an integral part of the global ecosystem as plants, animals or non-living resources. What is it that would make us *less* worthy of protection than its other components? Of course, this perspective represents the extreme end of the anthropocentric - intrinsic value continuum, and very few responsible individuals who have considered the issue seriously would go as far. Nevertheless, it does constitute a logical and directional conclusion drawn from the premises underlying the intrinsic value approach.

It is important not to read too much into these criticisms of intrinsic value. First, they are not meant to imply that the environment lacks intrinsic value. Instead, the comments are only designed to highlight the pitfalls associated with *processes and standards* which incorporate an intrinsic value component. It is unfortunate that intrinsic value cannot easily be folded into balancing processes without generating inconsistent and divisive results, but that inability is an acceptable cost of maintaining the level of protection the environment, and humanity, currently enjoy.

⁴⁴⁵Plant, Elements, *supra* note 86, at Part 2, Ch. I, sec. IA(a).

Second, rejection of intrinsic valuation should not be read as suggesting that it is inappropriate to create "absolute" prohibitions, i.e., those in which there is no balancing of interests. On the contrary, they can serve as useful short hand for clear cut cases, situations of *res ipsa loquitor* to borrow from tort law principles. In other words, certain environmental damage (considered anthropocentrically) is so likely to outweigh any potential military advantage that it makes sense to agree upon the prescriptions in advance to facilitate normative clarity and precision. Such prescriptions may be framed in terms of weapons (e.g., persistent chemicals), tactics (e.g., nuclear ground bursts), targets (e.g., nuclear power facilities), or effects (e.g., long-term, widespread and severe). Further, it is not necessary to establish their prohibitive effect at a damage level above that which traditional legal analysis would yield. This is because the applicative intent of law is designed to foster more than case specific "right" results. The broader goals of general and specific deterrence require prescriptive systems that are precise, understandable and lend themselves to practical enforcement. In isolated cases, right results may have to be sacrificed to secure the overall contributions that absolute prohibitions make to the greater good.

B. What is to be Done?

The proposition that the law is inadequate begs the question of what to do about its deficiencies. Most discussion has centered around the desirability of a new law of armed conflict convention to govern environmental damage during warfare. Notable among the proposals were Professor Plant's model elements and Greenpeace's call for a "Fifth Geneva Convention." The prevailing view, however, is that a convention might actually prove counterproductive. Not

surprisingly, those taking this position also generally assert the adequacy of existing prescriptions. If the law is adequate, why take on the daunting task of drafting a new convention?

However, an assertion that the law is *insufficient* does not necessarily lead to the conclusion that a new treaty is called for. Two additional issues must be addressed. First, if the law is insufficient, is an international convention the best remedy or are alternatives such as domestic legislation or adoption of common military manuals preferable? Second, even if a treaty is the optimal choice, the timing issue must be considered. In other words, given the current international political and legal context, is the time ripe for the enormous effort that would have to be mounted to secure an effective convention? It is the conclusion of this article that a convention *is* the answer, but that it might prove counterproductive to aggressively pursue one *right now*.

With regard to the need for an international agreement, it is useful to consider: 1) what it is the law needs to do, 2) whether those tasks are being accomplished by the existing law, and, if not, 3) whether a treaty would improve matters. For law to be effective, it must deter wrongful conduct. This purpose requires clearly enunciated practical norms and the support of the community of nations. Otherwise, states will not know the standards by which their conduct will be measured, nor those to hold others to; this scenario would be particularly disruptive to a legal regime which, albeit evolving, generally counsels against interference in the affairs of other states.

Does the present environmental law of war meet these requirements? Without reiterating the many points made throughout this article, it is fair to say that it falls short. The law is internally inconsistent, unclear, subject to varying definitions, haphazardly generated, and lacks the support of all normatively relevant actors. A convention, on the other hand, could address the issue comprehensively, thereby providing the requisite consistency and clarity. Explicating the

environmental conduct expected of states would limit destructive activities by those concerned with remaining within the confines of legality. It would also facilitate condemnation and reaction when rogue states violate the agreed upon and articulated prescriptions. In particular, it would make it harder for states that might be so inclined to look the other way in the face of violations. The net result would be an increase in the deterrent effect of this body of law.

In terms of practical impact, almost as important would be the existence of an agreed upon set of norms which could be adopted by the world's armed forces in their military manuals and serve as the basis for substantively common training. This is the purpose of the ICRC Guidelines. Regrettably, the ICRC effort has borne little fruit thus far, an unsurprising fact given the hodgepodge of law which it had to resort to in developing the guidelines.⁴⁴⁶ A comprehensive international convention on the subject would, presumably, resolve this obstacle. This would, in turn, advance the emergence of a common operational code among armed forces and policy makers.

Despite the advantages of a treaty, there would admittedly be downsides. Some critics of the idea contend that a treaty is not the appropriate legal instrument to address the topic. Treaties, for instance, are often subject to declarations, understandings, and reservations to secure agreement. The result is a complicated web of differing legal relationships based on who the parties involved in a particular issue are. Indeed, this phenomenon was evidenced in many of the instruments discussed above -- Protocol I, ENMOD, the 1925 Gas Protocol, etc. Given the variety of perspectives on the environmental law of war, declarations, understandings and reservations are likely; the complexity of an already complex subject would thereby swell.

⁴⁴⁶Also an obstacle is the fact that the world's most powerful state is not a party to one of its key reference points, Protocol I.

Opponents also note that treaties become outdated, whereas customary law, based as it is in state practice, is more adaptive. The pace of scientific discovery exacerbates this distinction, for when dealing with technologically driven agreements there is always the risk that science will outpace their prescriptive virility.

Such arguments are well-taken, but not entirely convincing. Even with reservations, the end result would almost certainly be more comprehensive and consistent than the current body of law, comprised as it is of everything from custom to turn of the century agreements which are silent on the environment to 70's vintage conventions that are still not universally accepted. Further, while international agreements can become out-of-date over time, once the ground has been broken with the first iteration of a treaty it is easier to update the regime later on.⁴⁴⁷ Arguably, then, the risk of becoming dated is outweighed by the benefits that clarity would provide over the life of a treaty. Of course, this assumes the convention is well done, that it, e.g., does not create problems such as those raised by Protocol I and ENMOD's terminological schizophrenia. It also assumes that international consensus can be reached on the subject, a major assumption to say the least.

Despite the usefulness of a convention, is the time right for one? There are very practical reasons to argue it is not. U.S. experience with major international treaties has not always been positive. In the cases of both the Law of the Sea Convention and Protocol I, the United States actively participated in negotiations only to reject what the respective diplomatic conferences

⁴⁴⁷This is precisely what has happened with the Law of the Sea Convention. The U.S. objected to the seabed mining provisions of the treaty. LOS Convention, *supra* note 161, pt. XI. However, since the treaty was completed, the provisions have become less relevant because seabed mining has not proven the profitable venture it was expected to. Another example is Protocol I, which was designed to update the Geneva Conventions. Protocol I has proven somewhat difficult to secure universal agreement on, but the process of securing consensus probably moves as quickly as the evolution of customary principles.

agreed upon. Nearly two decades later, the United States is still not a party to either agreement (although this may change with the LOS Convention in the near future). Regardless of the substantive merits of our position, to be the odd man out in these widely accepted treaty regimes is certainly not an enviable position.

Is there any greater likelihood of success in drafting an environmental convention, one with comprehensive norms that are more than hortatory or aspirational, which all parties can agree on? Given the anthropocentric-intrinsic value and developing-developed fault lines described earlier, the search for consensus would certainly be challenging. This raises the question of whether it would be preferable to work with the existing prescriptions, accepting their limitations, but benefiting from what little common ground does exist. To commence full-fledged negotiations at a point in the development of the law when normative limits are so unclear and cognitive perspectives so contradictory would be ill advised.

Additionally, the effectiveness of any new convention would be limited by the state of science. As the Gulf War experience made clear, there is much we do not understand about both the effects of war on the environment and its use to harm one's enemies. Is it appropriate to initiate a treaty in an environment of relative ignorance, or would it be better to work with current prescriptions until the quantum and quality of knowledge improve? This is a particularly relevant issue if the goal is to include provisions which address specific means and methods of warfare, rather than abstract descriptions of effect (e.g., widespread, long-term, severe). It will be difficult to reach consensus on weapons, tactics and targets absent a firmer scientific base than that evident in the Gulf War.

To summarize, there is a clear need for a convention, and every reason to begin *preparatory* work towards formulating a coherent position on its broad parameters. Today we are far enough removed from the emotionalism evoked by the Gulf War environmental destruction to rationally explore the merits and nature of a treaty regime that would be responsive to contemporary concerns regarding environmental protection *and* give warfighters the normative guidance they deserve. Exploratory first steps would force leading states to acknowledge the existing legal shortcomings and begin the process of rectifying them.

That said, *at this point in time* the costs of pursuing an environmental law of war convention aggressively are outweighed by the risk that the inadequate regime which already exists to protect the environment would be weakened. Weakening could result from the international political machinations that would attend multilateral negotiations, a possibility compounded by the risks associated with negotiating in the absence of a less than robust information base. In order to forge the consensus necessary *today*, an agreement would inevitably end in highly diluted prescriptions; neither law nor science are sufficiently developed to give the effort a fighting chance yet.

The belief that this is not a propitious time to take on a major new treaty effort is shared by both the ICRC's Hans-Peter Gasser and Conrad Harper of the State Department -- though they do not necessarily embrace the approach taken in this article to arrive at the conclusion. At the Naval War College Conference, Mr. Gasser argued that "(i)n terms of time, energy and resources, the cost of drafting, negotiating and adopting a new international treaty even on less difficult and controversial issues is today very high indeed. Moreover, failure of a codification attempt may in the end be more harmful to the cause than leaving the law as it is. And there is

always the risk that a new treaty may not be ratified by a large number of states.”⁴⁴⁸ Speaking at the same conference, Mr. Harper noted “(t)o the extent that widespread agreement on new laws and standards could be reached -- and I have my doubts -- the resulting agreement might likely resemble a lowest, common denominator, decidedly unhelpful in dealing with hard cases. Or, in order to garner consensus, a new agreement might well be a model of ambiguity, the value of which could also be fairly questioned.”⁴⁴⁹ Given the current state of affairs, both are correct -- for the moment.

This analysis begs the question of what can be done *now* to alleviate the immediate difficulties posed by the existing law. First, it is self-evident that those with influence on the international law-making process need to reconsider the off-the-shelf assessment of the law’s adequacy. Problems that have been identified need to be worked through in a measured, reflective and comprehensive fashion. The dialogue must continue to evolve, and the tough issues -- anthropocentrism versus intrinsic value, the contextuality of law, and law’s directional and temporal character -- have to be faced head on.

In the interim, states can begin addressing the issue individually. Arguably, the United States should take a serious look at its refusal to ratify Protocol I. Objections to the agreement valid in an era of bipolarity may no longer be as compelling as they once were. As to the environment, it is true that Protocol I’s relevant provisions are less than perfect -- law seldom is. Yet, in the new global paradigm the United States needs to be much more concerned about becoming the *victim* of environmental destruction than having its operational hands tied by the convention’s prohibitions. This argument is particularly compelling if our concerns extend to the

⁴⁴⁸Gasser, *supra* note 371, at 5-6.

⁴⁴⁹Harper, *supra* note 432, at 9.

environments of potential allies...and if we reflect upon who our likely adversaries might be. Finally, we should not forget that the United States is better able to adjust to limitations on methods and means of warfare than our enemies because of our overwhelming technological superiority, the redundancy of our capabilities and the quality of the forces we are most likely to be allied with. These factors give us some leeway in accepting legal regimes that are imperfect, but represent an overall step forward. Simply put, what is needed is a *de novo* legal and operational net assessment. We need to look at the big picture, not become trapped in the minutiae.

Unfortunately, measured reflection and reconsideration of our position on international treaties will not solve the warfighters' immediate dilemma...a daunting void of normative guidance. The problem is very real. How should judge advocates advise their commanders? What decision standards should commanders employ when confronted with the prospect that their militarily necessary actions might damage the environment? What can we do to redress the compelling need for uniform and usable guidance?

Obviously, the armed forces must continue to seek a common understanding of the environmental law of war. Positive steps in this direction are apparent across the DOD. Sponsorship of the conference at the Naval War College and publication of its proceedings, addition of the subject to the Environmental Law Advanced Course at the Air Force Judge Advocate General School, and devotion of a chapter to the environment in the Army's Operational Law Handbook are all extremely laudable. We need to continue addressing the subject aggressively.

However, the most important and immediate step the United States can take to foster clarity presents itself in the new multi-service law of war manual that is being drafted.⁴⁵⁰ Once in place, this single source will set a uniform standard for operations by U.S. forces. Perhaps even more significantly, the manual represents a chance to influence the rest of the world in the development of this area of law. Other armed forces will inevitably follow the U.S. lead. As an example of this tendency, consider Naval Warfare Publication 9, The Commander's Handbook on the Law of Naval Operations. Widely recognized as the most authoritative official source setting forth the naval law of armed conflict, sailors of many nations set sail with NWP-9 at arm's reach to serve as their guide to the law of armed conflict.⁴⁵¹ The new multi-service manual promises to be an even more influential document, particularly given the ever growing lead role the U.S. is playing in international military operations (including MOOTW).

But there is more involved than simply articulating the formal law. Military manuals serve an important function in *making* law. As Michael Reisman and William Leitzau have perceptively noted in their excellent article on the subject, military manuals "are an essential component in the international lawmaking process, often the litmus test of whether a putative prescriptive exercise has produced effective law. Without adequate dissemination, this putative international lawmaking is an exercise in the elaboration of myth through *lex simulata* rather than the installation of an effective operational code."⁴⁵² In other words, law acquires normative relevance when it becomes internalized, both by the system and by those who comprise it. Systemic

⁴⁵⁰For an excellent analysis of the roles of military manuals, see W. Michael Reisman and William K. Leitzau, *Moving International Law from Theory to Practice: the Role of Military Manuals in Effectuating the Law of Armed Conflict*, in *The Law of Naval Operations* 1 (Naval War College International Law Studies vol. 64) (Horace B. Robertson, Jr., ed. 1991).

⁴⁵¹The new Navy manual, NWP 1-14M, is certain to be as widely adopted as its predecessor, NWP 9.

⁴⁵²*Id.* at 1.

internalization is accomplished through acceptance and dissemination of the manual by authoritative military decision-makers. Individual internalization is fostered by the system's acceptance (military personnel tend to grant the system great deference) and through practice of the norms set forth. Ultimately, an operational code emerges.

Thus, a unique opportunity is at hand, not only to provide our policy makers and warfighters the legal guidance they require, but also to shape the law itself. Drawing on the analysis presented throughout this article, and cognizant of the importance of keeping law of war manuals simple (they are designed primarily for warfighters, not lawyers), the rough outlines of such a manual can be envisioned.

First, the manual's provisions should apply as a matter of *policy* whenever U.S. forces resort to force, unless rules of engagement approved by appropriate authorities (given the political ramifications, most likely the National Command Authorities -- NCA) indicate otherwise.⁴⁵³ Avoiding legal dissection of international v. non-international armed conflict issues in the manual will avoid confusion by troops in the field. A "presumption" in favor of international armed conflict standards will also help preclude after-the-fact criticism of U.S. actions. Another topic which should be avoided is the applicability of peacetime law. Its prescriptions are simply too uncertain, and its applicability too complex, to be directly incorporated in a usable law of armed conflict manual at this time.⁴⁵⁴

⁴⁵³Note that the Army's current position on the 1993 Chemical Weapons Convention is that it is not generally applicable to MOOTW. However, U.S. policy limiting use to those set forth in E.O. 11850 for riot control agents ("situations in which civilians are used to mask or screen attacks and civilian casualties can be avoided" and "rescue missions in remotely isolated areas, of downed aircraft and passengers, and escaping prisoners") would apply to MOOTW. Operational Law Handbook, *supra* note 168, at 5-5.

⁴⁵⁴ A caveat that peacetime law may be applicable to the extent it is consistent with the law of armed conflict could be included as a footnote if an annotated version is produced (as is being done with NWP 1-14M). The ICRC Guidelines provide an example of how such a provision might read: "International environmental agreements and relevant rules of customary law may continue to be applicable in times of armed conflict to the extent they are not inconsistent with the applicable law of armed conflict." ICRC Guidelines, *supra* note 138, at para. 5.

Meriting particular emphasis is the applicability of general customary law principles such as necessity, proportionality and humanity to environmental damage. Given the confusion it has generated, the concept of military necessity needs to be clarified by pointing out that it is a prerequisite to legality, not a device to excuse deviations from environmental norms.⁴⁵⁵ For the sake of clarity, it should also be pointed out that all of the prohibitions extend to the global commons (e.g., the high seas). Similarly, “property” and “civilian objects” are best defined as including *res communes*, such as air.

Also deserving emphasis is the concept of protection of the environment *per se*. This can be done by including a separate section on the environment or adding qualifiers at appropriate places in the text.⁴⁵⁶ Despite the need to address the environment as an independent entity, careful draftsmanship is required to avoid creating the impression that an intrinsic value approach is being adopted. Just because the environment deserves to be singled out for protection does not imply it should be *valued* intrinsically instead of anthropocentrically.

Indeed, special care must be taken not to otherwise incorporate, even unintentionally, intrinsic value concepts. This is most likely to be done through the inclusion of absolute prohibitions. To minimize this possibility, it is best to articulate them in terms of weapons, tactics or target, *not* result or effect. All absolute prohibitions present some risk. They are at core a form of legal shorthand which supplants the need to do proportionality calculations in *res ipsa loquitor* like situations. By their very nature, there will be times when absolute prohibitions

⁴⁵⁵The ICRC Guidelines correctly state the standard: “Destruction of the environment not justified by military necessity violates international humanitarian law....The general prohibition to destroy civilian objects, unless such destruction is justified by military necessity, also protects the environment.” ICRC Guidelines, *supra* note 138, at paras. 8-9.

⁴⁵⁶E.g., “..., including the environment,....”

preclude an action that would otherwise be acceptable. That is the cost of having them.

Depending on how they written, there is even a risk that application would actually *lower* the level of protection provided man by operating outside human concerns. To avoid this unacceptable result, a provision could be included in the manual to the effect that an absolute prohibition does not apply if, using the Protocol I Article 55 language, doing so would heighten the risk to human health and survival.

Target based prohibitions should include the Protocol I ban on attacking “objects indispensable to the civilian population” when the purpose is to deny those objects to the civilian population. Since the U.S. supports this Protocol I prohibition, it is reasonable to state it in the absolute.⁴⁵⁷ As a matter of *policy*, the manual should also include the convention’s prohibition on attacking works containing dangerous forces. This would represent only a minor limitation on U.S. operations, for it would be the exceptional case in which the benefits of attacking them would outweigh the political costs of doing so. Nevertheless, since the prohibition would be policy based, an exception for NCA approved strikes is advisable.

Weapons specific prescriptions found in international law (e.g., the Chemical Weapons Convention when ratified) and U.S. policy pronouncements (e.g., E.O. 11850) are equally necessary. In light of the political implications deriving from Protocol III to the Conventional Weapons Convention, use of incendiaries against environmental targets should be prohibited as a matter of *policy* except when employed against a target that is a military objective clearly separated from concentrations of civilians,⁴⁵⁸ or when otherwise authorized in rules of

⁴⁵⁷The technique is considered a form of starvation. Deployment Deskbook, *supra* note 304, para. 1.8.5.1.

⁴⁵⁸The protocol allows use in this circumstance.

engagement approved by appropriate authorities. Given the political risks, it would be reasonable to designate the NCA as the appropriate authority, though this power could be delegable.

Since all possible weapons, tactics and targets could not possibly be addressed in the manual, it will be necessary to incorporate some effect/result based prohibitions. As a general rule, they should be caveated as suggested above. Of course, the most compelling dilemma regarding such prescriptions is whether or not to adopt the “widespread, long-standing and/or severe” formula. This should be done. It is clearly the prevailing standard, found as it is in both of the *binding* instruments directly on point, Protocol I and ENMOD, as well as in publications such as the ICRC Guidelines and the German manual. The only potential alternative is the “due regard” criterion offered in NWP 1-14M and the San Remo Manual. While it may make sense to employ this maritime standard of care in the naval context, it is not widely accepted as a standard in land warfare, nor is there any firm basis for its use in existing environmental law of war. Additionally, it is questionable whether due regard adds much beyond traditional customary international law principles; even if it did, it is a standard that invites subjective interpretation. For better or worse, “widespread, long-standing and/or severe” is the standard of choice in the international community, one the United States will not be able to supplant. Therefore, we should adopt it as our own and direct our efforts to securing consensus on a definition we can live with.

Working towards a common understanding is the key. Since the standard is ill-defined, the fashion in which the manual unravels the definitional maze will prove very influential. How might it do so? To begin with, when speaking of manipulating environmental processes as a weapon, the definitions should be drawn from the ENMOD Understanding. After all, that particular component of the legal regime is relatively settled. However, what of damage *to* the

environment? An excellent approach is that adopted by the Army in defining the Protocol I terms in its Operational Law Handbook. “Long-term” is measured in decades (twenty or thirty years), a definition which enjoys the support of most practitioners and scholars because it is viewed as comporting with the original intent of the drafters. There being no indication of what was meant by the term “widespread” in the Protocol I drafting process, it makes sense to defer to its sole legal definition, that of ENMOD. Though ENMOD definitions were specifically said *not* to bind other agreements, this does not negate the logic of using them to minimize confusion if doing so makes sense contextually. Thus, as the Army does, the new manual should describe the term as implying damage that extends to several hundred kilometers. With regard to “severe,” the Handbook refers to the “prejudices the health or survival of the population” language of Article 55. While it certainly is essential to include damage at this level, ENMOD’s definition is more comprehensive. As noted, “severe” was defined in the Understanding Related to Article I as “involving serious or significant disruption to human life, natural and economic resources or other assets,” a definition that encompasses “health and survival,” but also has the advantage of extending to “property.” Extension of the definition in this manner is consistent with Protocol I protections generally, and the international law of armed conflict more broadly.

Except when restating the ENMOD prohibition, the phrase should be cast in the conjunctive. To do otherwise would set an excessively high level of protection. It would be illogical, e.g., to absolutely forbid an action which caused long-term and widespread environmental damage if that damage was insignificant. Similarly, if damage was long-term and severe, but very isolated, an absolute ban would constitute overreaching. A better result would be achieved through simple proportionality analysis.

Finally, inclusion of a section on responsibility is advisable, though care must be taken not to overstate the case. Individual responsibility could be addressed by noting that breach of the manual's provisions *may* constitute a violation of the Uniform Code of Military Justice and, in certain cases, amount to a war crime. A provision on state responsibility should point out that states may be held responsible for the acts of its military forces, and that obligations owed under international law to non-belligerents generally remain in effect during armed conflict.

Hopefully, these suggestions will offer food for thought as the effort to craft the new law of war manual gains momentum. Whatever the outcome, the drafters must understand the great opportunity, and responsibility, that the tasking represents. There is probably no other endeavor currently underway anywhere having a greater potential for shaping the environmental law of the future.

Final Reflections

After all is said and done, the assertion that the environmental law of war is adequate does not hold water. It is a law of gaps, competing perspectives and imprecision. The present standards are simply not robust enough to survive the hostile environment of international relations. Indeed, even after the Gulf War, a case involving near universal condemnation of the resulting environmental destruction, the basis for state responsibility was found elsewhere. This should be of enormous concern to those who value the environment, for how will the closer cases ever be judged?

Despite its shortcomings, the time is not ripe for a top to bottom reworking of the law. We have to first admit we have a problem -- acknowledge that the emperor has no clothes if you will -- and attempt to better understand it. To do that it is necessary to identify legal trends and

uncover the law's motivating forces. If consensus is ever to be arrived at, we must also grasp the varying cognitive prisms through which the topic is viewed. Hopefully, this article has contributed to the critical dialogue that must precede further forward progress in the field.

Finally, we must understand that this is not an ivory tower exercise for theorists who roam the halls of academia. On the contrary, the environment affects us all in ways we are only beginning to comprehend. Just as important, the issue has real-world operational implications for commanders in the field. They deserve guidance that is clear, comprehensive and practical. In the end, this is what the entire discussion has been about -- giving warfighters the tools they require to effectively safeguard the values of the global community. If this article has contributed in any way to that end, then the time and effort expended will have been very well rewarded indeed.

APPENDIX I

GUIDELINES FOR MILITARY MANUALS AND INSTRUCTIONS ON THE PROTECTION OF THE ENVIRONMENT IN TIMES OF ARMED CONFLICT⁴⁵⁹

I. Preliminary Remarks

(1) The present Guidelines are drawn from existing international legal obligations and from State practice concerning the protection of the environment against the effects of armed conflict. They have been compiled to promote an active interest in, and concern for, the protection of the environment within the armed forces of all States.

(2) Domestic legislation and other measures taken at the national level are essential means of ensuring that international law protecting the environment in times of armed conflict is indeed put into practice.

(3) To the extent that the Guidelines are the expression of international customary law or of treaty law binding a particular State, they must be included in military manuals and instructions on the laws of war. Where they reflect national policy, it is suggested that they be included in such documents.

II. General Principles of International Law

(4) In addition to the specific rules set out below, the general principles of international law applicable in armed conflict - such as the principle of distinction and the principle of proportionality - provide protection to the environment. In particular, only military objectives may be attacked and no methods or means of warfare which cause excessive damage shall be employed. Precautions shall be taken in military operations as required by international law.

G.P.I Arts. 35, 48, 52 and 57

(5) International environmental agreements and relevant rules of customary law may continue to be applicable in times of armed conflict to the extent that they are not inconsistent with the applicable law of armed conflict.

Obligations relating to the protection of the environment towards States not party to an armed conflict (e.g., neighboring States) and in relation to areas beyond the limits of national

⁴⁵⁹Hans-Peter Gasser, *For Better Protection of the Natural Environment in Armed Conflict: A Proposal for Action*, 89 Am. J. Int'l L. 637, 641 (1995). Reprinted here with the permission of the American Journal of International Law via the Copyright Clearance Center.

jurisdiction (e.g., the High Seas) are not affected by the existence of the armed conflict to the extent that they are not inconsistent with the applicable law of armed conflict.

(6) Parties to a non-international armed conflict are encouraged to apply the same rules that provide protection to the environment as those which prevail in international armed conflict and, accordingly, States are urged to incorporate such rules in their military manuals and instructions on the laws of war in a way that does not discriminate on the basis of how the conflict is characterized.

(7) In cases not covered by rules of international agreements, the environment remains under the protection and authority of the principles of international law derived from established custom, from the principles of humanity and from the dictates of public conscience.

H.IV preamble, G.P.I Art. 1.2, G.P.II preamble

III. Specific Rules on the Protection of the Environment

(8) Destruction of the environment not justified by military necessity violates international humanitarian law. Under certain circumstances, such destruction is punishable as a grave breach of international humanitarian law.

H.IV.R Art. 23(g), G.IV Arts. 53 and 147, G.P.I Arts. 35.3 and 55

(9) The general prohibition to destroy civilian objects, unless such destruction is justified by military necessity, also protects the environment.

H.IV.R Art. 23(g), G.IV Art. 53, G.P.I Art. 52, G.P.II Art. 14

In particular, States should take all measures required by international law to avoid:

(a) making forests or other kinds of plant cover the object of attack by incendiary weapons except when such natural elements are used to cover, conceal or camouflage combatants or other military objectives, or are themselves military objectives;

CW.P.III

(b) attacks on objects indispensable to the survival of the civilian population, such as foodstuffs, agricultural areas or drinking water installations, if carried out for the purpose of denying such objects to the civilian population;

G.P.I Art. 54, G.P.II Art. 14

(c) attacks on works or installations containing dangerous forces, namely dams, dykes and nuclear electrical generating stations, even where they are military objectives, if such attack may cause the release of dangerous forces and consequent severe losses among the civilian population and as long as such works or installations are entitled to special protection under Protocol I additional to the Geneva Conventions;

G.P.I Art. 56, G.P.II Art. 15

(d) attacks on historic monuments, works of art or places of worship which constitute the cultural or spiritual heritage of peoples.

H.CP, G.P.I Art. 53, G.P.II Art. 16

(10) The indiscriminate laying of land mines is prohibited. The location of all preplanned minefields must be recorded. Any unrecorded laying of remotely delivered non-self-neutralizing land mines is prohibited. Special rules limit the emplacement and use of naval mines.

G.P.I Arts. 51.4 and 51.5, CW.P.II Art. 3, H.VIII

(11) Care shall be taken in warfare to protect and preserve the natural environment. It is prohibited to employ methods or means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment and thereby prejudice the health or survival of the population.

G.P.I Arts. 35.3 and 55

(12) The military or any other hostile use of environmental modification techniques having widespread, long-lasting or severe effects as the means of destruction, damage or injury to any other State party is prohibited. The term "environmental modification techniques" refers to any technique for changing - through the deliberate manipulation of natural processes - the dynamics, composition or structure of the Earth, including its biota, lithosphere, hydrosphere and atmosphere, or of outer space.

ENMOD Arts. I and II

(13) Attacks against the natural environment by way of reprisals are prohibited for States party to Protocol I additional to the Geneva Conventions.

G.P.I Art. 55.2

(14) States are urged to enter into further agreements providing additional protection to the natural environment in times of armed conflict.

G.P.I Art. 56.6

(15) Works or installations containing dangerous forces, and cultural property shall be clearly marked and identified, in accordance with applicable international rules. Parties to an armed conflict are encouraged to mark and identify also works or installations where hazardous activities are being carried out, as well as sites which are essential to human health or the environment.

e.g. G.P.I Art. 56.7, H.CP. Art. 6

IV. Implementation and Dissemination

(16) States shall respect and ensure respect for the obligations under international law applicable in armed conflict, including the rules providing protection for the environment in times of armed conflict.

G.IV Art. 1, G.P.I Art. 1.1

(17) States shall disseminate these rules and make them known as widely as possible in their respective countries and include them in their programmes of military and civil instruction.

H.IV.R Art. 1, G.IV Art. 144, G.P.I Art. 83, G.P.II Art. 19

(18) In the study, development, acquisition or adoption of a new weapon, means or method of warfare, States are under an obligation to determine whether its employment would, in some or all circumstances, be prohibited by applicable rules of international law, including those providing protection to the environment in times of armed conflict.

G.P.I Art. 36

(19) In the event of armed conflict, parties to such a conflict are encouraged to facilitate and protect the work of impartial organizations contributing to prevent or repair damage to the environment, pursuant to special agreements between the parties concerned or, as the case may be, the permission granted by one of them. Such work should be performed with due regard to the security interests of the parties concerned.

e.g., G.IV Art. 63.2, G.P.I Arts. 61-67

(20) In the event of breaches of rules of international humanitarian law protecting the environment, measures shall be taken to stop any such violation and to prevent further breaches. Military commanders are required to prevent and, where necessary, to suppress and to report to competent authorities breaches of these rules. In serious cases, offenders shall be brought to justice.

G.IV Arts. 146 and 147, G.P.I Arts. 86 and 87

SOURCES OF INTERNATIONAL OBLIGATIONS CONCERNING THE PROTECTION OF THE ENVIRONMENT IN TIMES OF ARMED CONFLICT

1. General principles of law and international customary law
2. International conventions

Main international treaties with rules on the protection of the environment in times of armed conflict:

Hague Convention (IV) respecting the Laws and Customs of War on Land, of 1907 (H.IV), and Regulations Respecting the Laws and Customs of War on Land (H.IV.R)

Hague Convention (VIII) relative to the Laying of Automatic Submarine Contact Mines, of 1907 (H.VIII)

Geneva Convention relative to the Protection of Civilian Persons in Time of War, of 1949 (GC.IV)

Hague Convention for the Protection of Cultural Property in the Event of Armed Conflict, of 1954 (H.CP)

Convention on the Prohibition of Military or any Other Hostile Use of Environmental Modification Techniques, of 1976 (ENMOD)

Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), of 1977 (G.P.I)

Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of Non-International Armed Conflicts (Protocol II), of 1977 (G.P.II)

Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May be Deemed to be Excessively Injurious or to Have Indiscriminate Effects, of 1980 (CW), with:

Protocol on Prohibitions or Restrictions on the Use of Mines, Booby Traps and Other Devices (CW.P.II)

Protocol on Prohibitions or Restrictions on the Use of Incendiary Weapons (CW.P.III).

APPENDIX II⁴⁶⁰

ELEMENTS OF A NEW CONVENTION ON THE PROTECTION OF THE ENVIRONMENT IN TIME OF ARMED CONFLICT

PART 1 GENERAL PRINCIPLES ELEMENT 1

UNDER A CHAPTER HEADING:
"CHAPTER I: GENERAL PROVISIONS"

UNDER A SECTION HEADING:
"SECTION I: GENERAL PRINCIPLES AND SCOPE OF APPLICATION"

- A. A provision that, in cases not covered by the Convention, the environment remains under the protection of principles derived from established custom and the dictates of public conscience.
- B. A provision that the Convention applies at all times, except where the context requires that it apply only during hostilities, and to all situations of armed conflict, wherever occurring.
- C. A restatement of the principles that the right of the Parties to a conflict to choose methods and means of warfare is not unlimited and that the only legitimate objective of states in time of armed conflict is to weaken the enemy forces.
- D. A provision that states shall be liable to pay compensation in respect of and shall bear responsibility for breaches of the Convention.
- E. A provision that:

⁴⁶⁰ From *Environmental Protection and the Law of War: A "Fifth Geneva" Convention on the Protection of the Environment in Time of Armed Conflict* 189 (Glen. Plant ed. 1992). The "Elements" were prepared by Professor Glen Plant as a basis for discussion at the London Conference. Based on those discussions Professor Plant prepared a revised version which was then submitted for consideration at the Ottawa Conference. The version which appears here is the second revision, prepared following Ottawa. All versions are reprinted in *id.* The "Elements" are reprinted here with the very kind permission of Professor Plant

- (a) a Party has the responsibility to ensure that military activities under its jurisdiction or control do not cause damage to the environment of neutral states or of areas beyond national jurisdiction;
- (b) a Party wishing to conduct such military activities should notify any neutral state the environment of which is likely to be damaged by them of its intention to carry them out and should consult and, where appropriate, cooperate with it in minimizing the danger and effects of such damage, at least to the extent that this does not compromise the security of the military operation in question;
- (c) where applicable, the precautionary principle and environmental impact assessments should be applied; and
- (d) if such damage in fact occurs, the Party conducting the military activities should monitor this and fully inform the neutral states affected and/or, where damage to the global commons occurs, appropriate international organizations of the existence of the damage and of its findings.

F. A provision or provisions expressly stating that the principles of state necessity and military necessity do not automatically prevail over the principle of environmental protection.

UNDER A SECTION HEADING:

“SECTION II: LEGAL STATUS OF THE PARTIES TO THE CONFLICT”

G. A provision reproducing with minor amendment Article 4 of Protocol I, that the legal status of the Parties shall not be affected by the Convention.

UNDER A SECTION HEADING:

“SECTION II: DEFINITIONS”

H. A provision defining “environment” for the purpose of the Convention and other matters which it will be necessary to define.

PART 2
TARGETRY
ELEMENT 2

UNDER A CHAPTER HEADING:
“CHAPTER I: METHODS AND MEANS OF WARFARE”

UNDER A SECTION HEADING:
“SECTION I: METHODS AND MEANS OF WARFARE”

A. A provision establishing the threshold at which methods and means of warfare are prohibited because of their intended or expected impact upon the environment. There appear to be approximately four options for change:

Option (a): prohibiting the employment of methods or means of warfare which are intended, or may be expected, to cause *any* (except *de minimis*, or “insignificant”, or “unappreciable”) damage to the environment;

Option (b): prohibiting it at least where the damage is widespread, long-lasting or severe;

Option (c): prohibiting it as under alternative (b), but adding a fourth alternative criterion, “significant (or ‘appreciable’) and irreversible”.

Option (d): choosing some mid-way position between alternative (b) and the existing high threshold as it appears in Article 35(3) of Protocol I.

B. A provision that a state is obligated, in the study, development, acquisition or adoption of a new weapon, means or method of warfare, to determine whether or not its employment would, in all the circumstances, be prohibited by the Convention.

UNDER A CHAPTER HEADING:
“CHAPTER II: GENERAL PROTECTION AGAINST EFFECTS OF HOSTILITIES”

UNDER A SECTION HEADING:
“SECTION I: BASIC RULE AND FIELD OF APPLICATION”

C. A provision or provisions reproducing Articles 48 and 49 of Protocol I substituting the term “environment” or suitable variations for “civilian” and its variants, where appropriate.

UNDER A SECTION HEADING:
"SECTION II: PROTECTION OF THE ENVIRONMENT"

D. A provision that, in case of doubt whether or not an object or area is part of the environment, it is to be presumed that it is.

E. A provision reproducing the prohibition of acts against the environment by way of reprisal in Article 55(2) of Protocol I. This is to clearly comprehend all acts of reprisal and not merely those which result in ultimate loss to or injury of humans.

F. A provision that attacks upon works and installations containing dangerous forces is prohibited in all circumstances which carry an "appreciable" (or "significant") risk of the release of dangerous forces and consequent severe environmental damage (regardless of losses among the civilian population). It might also prohibit all attacks upon nuclear electricity generating stations in all circumstances. It should reproduce, with necessary modifications, Article 56(3)-(7) of Protocol I.

UNDER A SECTION HEADING:
"SECTION III: PRECAUTIONARY MEASURES"

G. A provision or provisions reproducing the relevant parts of Articles 57 and 58, substituting the term "environment" and variants thereon as appropriate.

UNDER A SECTION HEADING:
"SECTION IV: LOCALITIES AND ZONES UNDER SPECIAL PROTECTION"

H. A provision that localities and zones containing ecosystems, species or genetic material of vital international importance shall not be subject to attack and shall be demilitarized zones.

PART 3
WEAPONRY
ELEMENT 3

UNDER A CHAPTER HEADING:
“CHAPTER I: PROHIBITIONS OR RESTRICTIONS ON THE USE OF
CERTAIN WEAPONS WHICH MAY BE CONSIDERED TO BE
EXCESSIVELY INJURIOUS. TO THE ENVIRONMENT”

UNDER A SECTION HEADING:
SECTION I “GENERAL PROVISIONS”

A. A provision that nothing in Part 3 of the Convention should be interpreted to detract from other provisions in the Convention, nor from obligations imposed upon Parties by international humanitarian law, nor from the Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons which may be Deemed to be Excessively Injurious or to Have Indiscriminate Effects 1980 (the Inhumane Weapons Convention).

UNDER A SECTION HEADING:
“SECTION II: DEFOLIANTS, HERBICIDES, *DAISY CUTTER* BOMBS,
MASSIVE CONVENTIONAL BOMBING OR CRATERING AND
FOREST PLOWS”

B. A provision prohibiting the massive use of defoliants, herbicides, “*daisy cutter*” bombs, massive conventional bombing and cratering and large plows to remove forest and other kinds of plant cover, except on a small scale to assist in the preparation of air strips, harbors or military camps and of reasonable cleared perimeters around these and roads or tracks bordered by cover which can facilitate an ambush.

UNDER A SECTION HEADING:
“SECTION III: MINES, BOOBY TRAPS AND OTHER DEVICES”

C. A provision or provisions that provide that:

- (a) the direction of mines, booby traps and other devices (as defined in Article I of Protocol II to the Inhumane Weapons Convention 1980, with the addition of sea mines) against the environment is prohibited;

- (b) all precautions which are practicable or practically possible, taking into account all of the circumstances, should be taken to protect the environment from pollution caused by or other injurious effects of these weapons;
- (c) these weapons are to be designed so as to minimize damage to the environment;
- (d) the location of minefields, mines, booby traps and other devices is to be recorded;
- (e) Parties are to cooperate to ensure their removal after their military purpose has been served.

UNDER A SECTION HEADING:
 “SECTION IV: INCENDIARY AND BLAST EFFECT WEAPONS”

D. A provision or provisions that provide that:

- (a) it is prohibited to make the environment, including forests and other kinds of plant cover, the object of attack by incendiary or blast effect weapons, *even when* plant cover is used to cover, conceal or camouflage combatants or other military objectives *and* the incendiary or blast effect is not specifically designed to cause burn injury or blast injury, respectively, to persons, but to be used against military objectives, such as armored vehicles, aircraft and installations or facilities. In so far as this prohibition conflicts with Article 2(4) of Protocol III to the Inhumane Weapons Convention 1980, this provision is to prevail.
- (b) Incendiary weapons may as an exception to this prohibition be used to set fire to military obstacles such as oil-filled ditches, where this does not cause widespread, long-lasting or severe damage to the environment (or perhaps exceed another threshold to be chosen).
- (c) Blast-effect weapons may as an exception to this prohibition be used to clear minefields.

PART 4
EXECUTION OF THE CONVENTION
ELEMENT 4

UNDER A CHAPTER HEADING:
“CHAPTER I: EXECUTION OF THE CONVENTION”

UNDER A SECTION HEADING:
“SECTION I: GENERAL PROVISIONS”

- A. A provision reproducing with minor modifications Articles 80 and 82 to 84 of Protocol I.

UNDER A SECTION HEADING:
“SECTION II: REPRESSION OF BREACHES OF THE CONVENTION”

- B. A provision that a deliberate breach of the prohibition on causing environmental damage under Element 2.A, F or H is a “grave breach” of the Convention, justifying criminal prosecution of responsible individuals.
- C. A provision or provisions reproducing with minor amendments Articles 86, 87, 89 and 90 of Protocol I.

- D. There are two possible options:

Option (a): A provision that a Party in whose territory an offender or alleged offender under Element 2.A, F or H is present and which does not submit his case for possible prosecution to its own prosecuting authorities shall detain him at the request of a state requesting it to do so and deliver him up to that state for prosecution. This obligation should also extend to the making available of evidence in the required state's possession and should not depend upon the existence of extradition arrangements between the states in question. It should also reproduce Article 88(3) Protocol I;

Option (b): A provision reproducing with minor amendments Article 88 Protocol I.

- E. A restatement of the general principle of state responsibility stated in Element 1.D.

PART 5
INSTITUTIONS
ELEMENT 5

UNDER A CHAPTER HEADING:
“CHAPTER I: EXECUTION OF THE CONVENTION”

UNDER A SECTION HEADING:
“SECTION I: PROTECTING ORGANIZATION”

A. A provision:

- (a) requiring Parties to a conflict to accept a new organization or an existing organization (the “Organization”) to be determined as a Protecting Organization for the purpose of applying the Convention and safeguarding the environment;
- (b) permitting a substitute organization or organizations, which offer(s) all guarantees of impartiality and efficacy in the environmental protection field, to be appointed instead but only with the consent of all Parties to the conflict and following and taking into account the results of consultations between it and the Parties;
- (c) permitting the Organization to operate under a distinctive emblem, and providing that its personnel operating under it should be immune from attack;
- (d) referring to an *Annex I* setting out the structure and functions of the Organization (*see infra*).

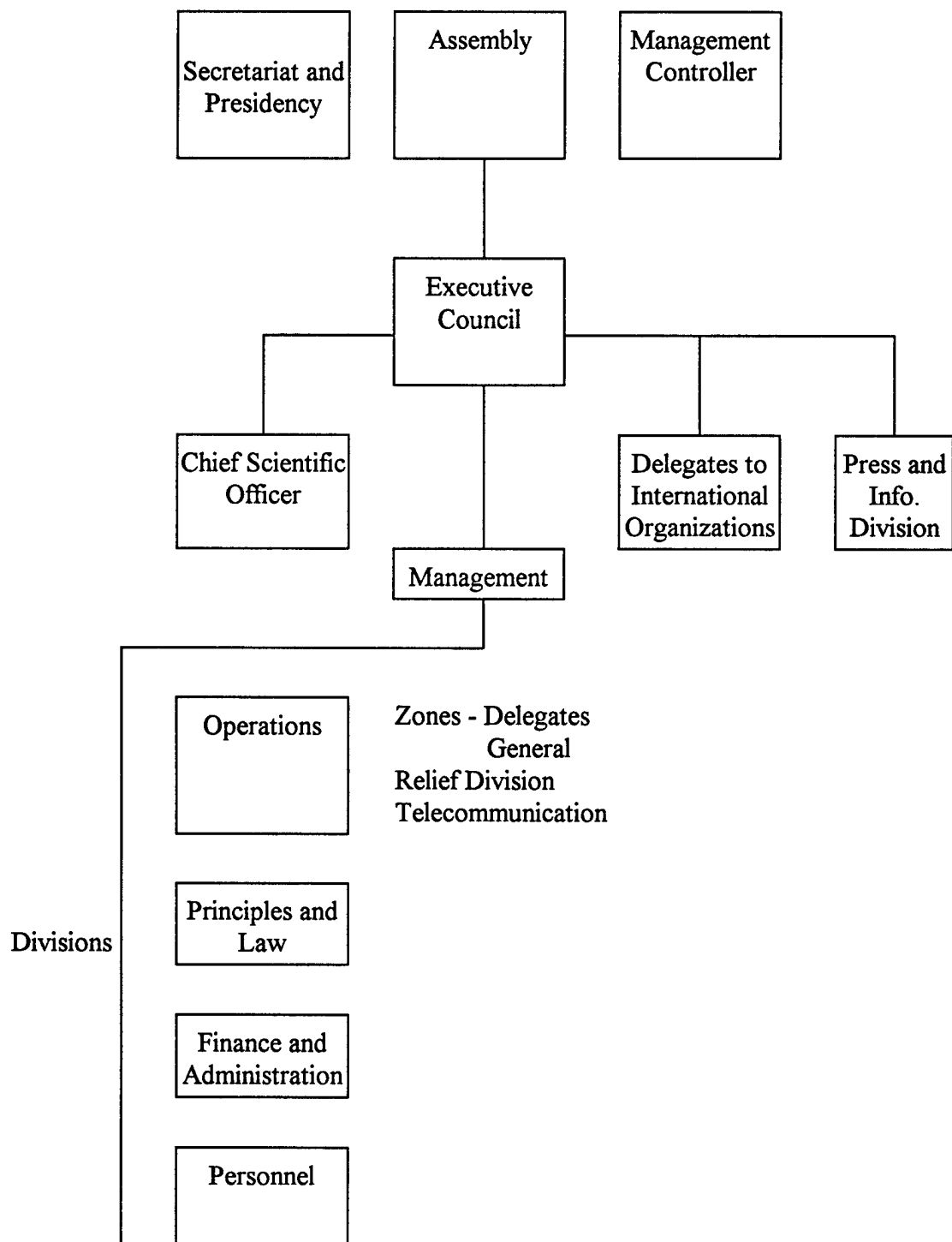
B. A provision reproducing Article 81, with necessary modifications, requiring Parties to provide the Organization with all necessary facilities within their power.

UNDER A SECTION HEADING:
“SECTION II: RELIEF IN FAVOR OF THE ENVIRONMENT”

C. A provision:

- (a) authorizing the Organization to carry out actions which are impartial and remedial of environmental damage caused by a Party in breach of its obligations under the Convention and stipulating that these actions shall not be regarded as interference in the conflict nor as unfriendly acts; and
- (b) reproducing, with necessary amendments, Articles 70(2)-(5) of Protocol I.

ELEMENT 5 continued
ANNEX 1
ORGANIZATION OF A NEW ORGANIZATION



APPENDIX III

MUNICH CONFERENCE FINAL RECOMMENDATIONS⁴⁶¹

**International Council of Environmental Law
IUCN-Commission on Environmental Law**

**Law Concerning
the Protection of the Environment
in Times of Armed Conflict
Consultation, 13-15 December 1991**

Final Recommendations

A consultation of legal experts was held in Munich, Germany on 13 through 15 December 1991 on the law concerning the protection of the environment in times of armed conflict. Participants are recorded in the attached list.

The Experts Group examined the applicable norms of international law and discussed possible ways of strengthening the law in this area. Measures regarding arms control and disarmament were not examined with the partial exception of the Convention on the Prohibition of Military or any other Hostile Use of Environmental Modification Techniques (ENMOD), although the Group noted that limitations on weapons availability have direct benefits for preventing environmental damage.

In particular, the Group made reference to the Geneva Conventions of 12 August 1949 and to the 1977 Protocol Additional to the Geneva Conventions of 12 August 1949, relating to the Protection of Victims of International Armed Conflicts (Protocol I). The Group noted that, except in cases where it is specifically authorized, the use of forces by States is prohibited under the Charter of the United Nations and customary international law. The Group was fully aware of the importance of preventing the use of environmental modification techniques in armed conflict and therefore, noted the unsatisfactory state of ratifications of ENMOD.

The Group divided its analysis into two parts. The first examined measures to increase the effectiveness of existing legal norms. The second focused on proposals to ensure better development of environmental protection in times of armed conflict.

⁴⁶¹ Reprinted with the kind permission of the International Council of Environmental Law (previously unpublished).

Recommendations were agreed to by the Group by consensus, following plenary discussion. The recommendations are as follows:

Part I: Increasing the Effectiveness of Existing Law

1. The Experts Group strongly urged universal acceptance of existing international legal instruments, in particular of the 1977 Protocol Additional to the Geneva Conventions of 12 August 1949 and Relating to the Protection of Victims of International Armed Conflicts (Protocol I). Articles 35(3) and 55 of Protocol I specifically relate to environmental protection and prohibit attacks on the environment *per se*, as well as making use of the environment as an instrument of warfare.⁴⁶²
2. The Group observed that the current recognition that the environment itself is an object of legal protection in times of armed conflict implies that traditional perceptions of proportionality and military necessity have become obsolete.
3. The Group highlighted the importance of the norms of customary international law applicable in times of armed conflict which, *inter alia*, prohibit devastation not justified by military necessity.
4. The Group further urged States to accept the competence of the International Fact-finding Commission provided for in Article 90 of Protocol I, whose task it is to inquire into alleged serious violations of the Conventions or the Protocols.⁴⁶³
5. Having in mind the obligation of Parties to the Geneva Conventions and to Protocol I to take all necessary measures for the implementation of the obligations under these instruments, the Group stressed the importance of giving orders and instructions to ensure their observance, notable through their incorporation in military manuals.
6. The Group drew attention to the fact that the rules of international environment law continue to apply between parties to an armed conflict and third parties. It recommended clarification of the extent to which these rules also continue to apply between parties to an armed conflict.

⁴⁶²As of 1 January 1992, 107 States were part to Protocol I. Protocol I, Article 35(3) states: "It is prohibited to employ methods or means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment." Protocol I, Article 55 states: "1. Care shall be taken in warfare to protect the natural environment against widespread long-term and severe damage. This protection includes a prohibition of the use of methods or means of warfare which are intended or may be expected to cause such damage to the natural environment and thereby to prejudice the health or survival of the population. 2. Attacks against the natural environment by way of reprisals are prohibited."

⁴⁶³The relevant clause of Protocol I, Article 90(2)(c), states: "The Commission shall be competent to: (i) inquire into any facts alleged to be a grave breach as defined in the Conventions and this Protocol or other serious violation of the Conventions or of this Protocol; (ii) facilitate, through its good offices, the restoration of an attitude of respect for the Conventions and this Protocol."

7. Encouraged by the heightened public recognition of the need to protect the environment in times of armed conflict, the Group called upon States and interested national and international, governmental and non-governmental organizations to increase consciousness of this need, in particular, on the part of policy makers and military commanders.

8. The Group urged States and interested national and international, governmental and non-governmental organizations to intensify their efforts to attain the objectives set out above.

9. The Group noted that States are duty-bound to comply fully with their obligations under international law concerning the protection of the environment in times of armed conflict. Where specific treaty obligations are involved, States are expected to observe them accordingly.

Part II: Further Development of the Law

10. Duty to Protect the Environment *Per Se*

The Group felt that any new instrument concerning the protection of the environment in times of armed conflict should be based on the concept that the environment *per se* has to be protected.

11. Emergency Preparedness

The Group recommended that the United Nations establish a system for emergency preparedness to protect the environment in times of armed conflict. States should be invited to participate in such a system by offering appropriate expert personnel, logistics, facilities, equipment and funds.⁴⁶⁴ In this connection, the special needs and interests of the developing countries should be taken into account.

12. Information Necessary for Environmental Protection

The Group emphasized that the United Nations should urge States to provide information necessary to assess environmental damage, or the threat of such damage and, in cooperation with competent international organizations,⁴⁶⁵ to participate in the monitoring of damage including, where appropriate, on-site inspections.

13. Prevention

The Group strongly urged that further international and national measures to prevent harm to the environment be developed. In particular, two lists should be prepared:

- (a) A catalogue of human activities with hostile purposes injurious to the environment should be compiled. Some acts would be prohibited absolutely and others would be permitted conditionally. Conduct involving a prohibited act would constitute a grave breach

⁴⁶⁴ Precedents for study include the United Nations Environment Programme's 1991 Interagency Action Plan for Kuwait and the Persian Gulf area and the International Atomic Energy Agency's programme for response to emergency nuclear accidents, which was strengthened after Chernobyl. Current discussions on emergency preparedness in the United Nations General Assembly should include establishing stand-by units such as those marshaled to cope with water and air pollution in the Persian Gulf.

⁴⁶⁵ An example of such international agency cooperation is the World Meteorological Organisation's World Weather Watch.

of State duties to protect the environment. Since the environment itself is the object of a State's duty to provide protection, this list of hostile acts would include:

- (i) intentional attacks on the environment;
- (ii) the manipulation of natural processes causing environmental damage; and
- (iii) significant collateral damage to the environment.

(b) A registry of all protected areas should be completed. International criteria should be established by competent bodies to determine which areas should be included on this registry.⁴⁶⁶

The extent to which, if at all, such listed sites should be militarized or used, even for transit, by forces engaged in warfare, armed conflict or hostile activities should be studied. Measures should be adopted to ensure effective protection of such areas,⁴⁶⁷ which should be clearly identified for military authorities and the general public on maps and *in situ* by internationally agreed, distinctive signs and symbols. All interested national and international, governmental and non-governmental organizations should widely disseminate information about the protected status of these areas and about the meaning of these signs and symbols.

14. Duties of Neutral or Non-belligerent States concerning the Environment

The Group observed that neutral or non-belligerent States should act to prevent harm to the environment under their jurisdiction or control, or in the commons, when no other State or international authority can act to prevent environmental damage or the threat thereof.⁴⁶⁸ Extension of such actions to the territory of another State, or to territory controlled by it, needs further study.

15. Impact of Scientific Progress

In Light of advances in scientific understanding of environmental damage, the Group noted that States should revise and update their military procedures in order to ensure protection of the environment to the fullest possible extent in times of armed conflict. This necessitates a reconsideration of traditional targets.⁴⁶⁹

16. Dangerous Forces, Ultra-hazardous Activities and Potentially Dangerous Sites

The Group recognized that experience with dangerous forces and ultra-hazardous activities indicates that they should not be identified as military targets. Works and installations containing dangerous forces or in which ultra-hazardous activities are carried out include those whose contents, if damaged, could harm human health or the environment.⁴⁷⁰ Moreover, sites which,

⁴⁶⁶ Such inventories as the United Nations List of National Parks and Equivalent Reserves, the Ramsar Wetlands of International Importance, the UNESCO Biosphere Reserves and regional lists such as the Council of Europe's Biogenetic Reserves can be used at once.

⁴⁶⁷ These areas could encompass cultural and historic sites, including museums and galleries with significant collections, as well as botanical and zoological parks and natural history museums.

⁴⁶⁸ Reference was made in this connection to the concept of "protecting power" under the Geneva Conventions.

⁴⁶⁹ For instance, the sinking of oil tankers with consequent contamination of marine resources should be avoided since other military measures may be utilised to prevent or impede delivery of oil on which an adversary State's military may depend.

⁴⁷⁰ Examples are oil reservoirs and nuclear installations used for peaceful purposes.

although not inherently dangerous, are essential to human health or the environment should not be military targets.⁴⁷¹

17. Threats to the Peace

The Group considered the possibility that hostile action likely to cause significant damage to the environment of another State or to the commons or having already caused such damage be considered a threat to international peace and security and that appropriate measures be taken accordingly.

18. Responsibility/Liability

Taking into account:

- the general obligation of States to prevent significant damage to the environment outside their national jurisdiction or control;
- the decision of the Security Council that Iraq is responsible "for any direct loss and damage, including environmental damage and the depletion of natural resources (...) as a result of Iraq's unlawful invasion and occupation of Kuwait,"⁴⁷²; and
- Article 91 of Protocol I,⁴⁷³

the Group called upon States and national and international, governmental and non-governmental organizations to consider and refine the concept of the international responsibility/liability of States in order to make it fully operational (including the determination of thresholds of damage), in particular for instances of armed conflict. Damage may be actual or potential and restoration should include all reasonable measures to reinstate or restore damaged or destroyed components of the environment equivalent to those impaired or lost. Risk of threatened damage includes the combined effect of the probability of occurrence of an undesired event and its magnitude. Compensation in kind should be required when restoration is not physically possible.⁴⁷⁴

19. Dispute Settlement

The Group noted that environmental protection disputes should be resolved peacefully. Recourse to dispute settlement mechanisms would contribute to improved protection of the environment in times of armed conflict.⁴⁷⁵

20. Fora for the Further Development of International Law

The Group noted that the United Nations General Assembly and, in particular, its Sixth (Legal) Committee, is a principal forum for the further development of international law for the protection

⁴⁷¹ Examples are water purification facilities and sewage treatment plants.

⁴⁷² United Nations Security Council Resolution 687 (16) (3 April 1991).

⁴⁷³ Protocol I, Article 91 on Responsibility states: "A Party to the conflict which violates the provisions of the Convention or of this Protocol shall be responsible for all acts committed by persons forming part of its armed forces."

⁴⁷⁴ Such restoration in kind could include establishing a fish hatchery where a natural nursery for fish is lost, planting a new forest or new wetland area in lieu of one which could not be restored, or any comparable measure taken, for example, where it may not be possible or practical to remove oil settled on a seabed.

⁴⁷⁵ Including compulsory jurisdiction of the International Court of Justice.

of the environment in times of armed conflict. The Group further urged that the United Nations Decade of International Law be used to focus attention on these issues and that the Sixth (Legal) Committee be encouraged to reinforce its initiating and coordinating role to clarify and further strengthen the effectiveness of environmental protection through international law and to propose appropriate and necessary action. Furthermore, the Group encouraged the International Committee of the Red Cross to continue its efforts to strengthen the effectiveness of environmental protection through international humanitarian law and to propose appropriate and necessary action. As the unsatisfactory state of ratifications of the ENMOD Convention may be due to some loopholes in it, the Group requested the next Revising Conference to consider possible amendments and clarifications. Finally, the Group encouraged IUCN-The World Conservation Union and the International Council of Environmental Law to pursue further study of these issues and to disseminate the results of such studies.

APPENDIX IV

Parties to Protocol Additional I

As of 30 April 1996*

<u>Parties</u>	<u>Year**</u>
Albania	1993
Algeria	1989
Angola	1984
Antigua and Barbuda	1986
Argentina	1986
Armenia	1993
Australia	1991
Austria	1982
Bahamas	1980
Bahrain	1986
Bangladesh	1980
Barbados	1990
Belarus	1989
Belgium	1986
Belize	1984
Benin	1986
Bolivia	1983
Bosnia-Herzegovina	1992
Botswana	1979
Brazil	1992
Brunei Darussalam	1991
Bulgaria	1989
Burkina Faso	1987
Burundi	1993
Cameroon	1984
Canada	1990
Cape Verde	1995
Central African Republic	1984
Chile	1991

* Source: ICRC (net site: www.icrc.ch/icrcnews)

** Deposit of Instrument with Swiss Federal Department of Foreign Affairs

China	1983
Colombia	1993
Comoros	1985
Congo	1983
Costa Rica	1983
Côte d'Ivoire	1989
Croatia	1992
Cuba	1982
Cyprus	1979
Czech Republic	1993
Denmark	1982
Djibouti	1991
Dominican Republic	1994
Ecuador	1979
Egypt	1992
El Salvador	1978
Equatorial Guinea	1986
Estonia	1993
Ethiopia	1994
Finland	1980
Gabon	1980
Gambia	1989
Georgia	1993
Germany	1991
Ghana	1978
Greece	1989
Guatemala	1987
Guinea	1984
Guinea-Bissau	1986
Guyana	1988
Holy See	1985
Honduras	1995
Hungary	1989
Iceland	1987
Italy	1986
Jamaica	1986
Jordan	1979
Kazakhstan	1992
Korea (Dem. People's Rep.)	1988
Korea (Republic of)	1982
Kuwait	1985
Kyrgyzstan	1992
Lao People's Dem. Rep.	1980
Latvia	1991
Lesotho	1994

Liberia	1988
Libyan Arab Jamahiriya	1978
Liechtenstein	1989
Luxembourg	1989
Macedonia	1993
Madagascar	1992
Malawi	1991
Maldives	1991
Mali	1989
Malta	1989
Mauritania	1980
Mauritius	1982
Mexico	1983
Micronesia	1995
Moldova (Republic of)	1993
Mongolia	1995
Mozambique	1983
Namibia	1994
Netherlands	1987
New Zealand	1988
Niger	1979
Nigeria	1988
Norway	1981
Oman	1984
Panama	1995
Paraguay	1990
Peru	1989
Poland	1991
Portugal	1992
Qatar	1988
Romania	1990
Russian Federation	1989
Rwanda	1984
Saint Kitts and Nevis	1986
Saint Lucia	1982
Saint Vincent Grenadines	1983
Samoa	1984
San Marino	1994
Saudi Arabia	1987
Senegal	1985
Seychelles	1984
Sierra Leone	1986
Slovakia	1993
Slovenia	1992
Solomon Islands	1988

South Africa	1995
Spain	1989
Surinam	1985
Swaziland	1995
Sweden	1979
Switzerland	1982
Syrian Arab Republic	1983
Tajikistan	1993
Tanzania (United Rep. of)	1983
Togo	1984
Tunisia	1979
Turkmenistan	1992
Uganda	1991
Ukraine	1990
United Arab Emirates	1983
Uruguay	1985
Uzbekistan	1993
Vanuatu	1985
Viet Nam	1981
Yemen	1990
Yugoslavia	1979
Zaire	1982
Zambia	1995
Zimbabwe	1992

APPENDIX V

Parties to ENMOD

As of 23 April 1996*

<u>Parties</u>	<u>Year**</u>
Afghanistan	1985
Algeria	1991
Antigua and Barbuda	1988
Argentina	1987
Australia	1984
Austria	1990
Bangladesh	1979
Belarus	1988
Belgium	1982
Benin	1986
Brazil	1984
Bulgaria	1978
Canada	1981
Cape Verde	1979
Chile	1994
Costa Rica	1996
Cuba	1978
Cyprus	1978
Czech Republic	1993
Democratic People's Republic of Korea	1984
Denmark	1978
Dominica	1992
Egypt	1982
Finland	1978
Germany	1983
Ghana	1978
Greece	1983
Guatemala	1988
Hungary	1978

* Source: Multilateral Treaties Deposited with the Secretary General (net site: www.un.org/Depts/Treaty)

** Deposit of Instrument with United Nations

India	1978
Ireland	1982
Italy	1981
Japan	1982
Kuwait	1980
Lao People's Democratic Republic	1978
Malawi	1978
Mauritius	1992
Mongolia	1978
Netherlands	1983
New Zealand	1984
Niger	1993
Norway	1979
Pakistan	1986
Papua New Guinea	1980
Poland	1978
Republic of Korea	1986
Romania	1983
Russian Federation	1978
Saint Lucia	1993
Sao Tome and Principe	1979
Slovakia	1993
Solomon Islands	1981
Spain	1978
Sri Lanka	1978
Sweden	1984
Switzerland	1988
Tunisia	1978
Ukraine	1978
United Kingdom	1978
United States of America	1980
Uruguay	1993
Uzbekistan	1993
Viet Nam	1980
Yemen	1977

SUGGESTED READINGS ON THE ENVIRONMENTAL LAW OF WAR

The following sources represent useful readings for further inquiry into the environmental law of war issues discussed in this article. Some provide a general understanding of broad issues, such as responsibility under international law, while other have a much narrower focus. This list is not a compilation of the sources cited, but rather a tool for those wanting to explore this topic more deeply.

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